HILLGROVE RESOURCES

ASX RELEASE

Friday, 30 August 2013

KANMANTOO COPPER MINE – 2013 MINERAL RESOURCE STATEMENT

Hillgrove Resources Limited (ASX:HGO) advises that a new Mineral Resource estimate has been prepared for the Kanmantoo Copper Mine.

Kanmantoo Global Mineral Resource Estimate at end February 2013

	JORC 2012 Classification	Tonnage (Mt)	Cu (%)	Au (g/t)	Ag (g/t)
In Situ Resource	Measured	2.63	0.88	0.10	1.95
	Indicated	21.77	0.82	0.23	2.21
	Inferred	5.0	0.67	0.13	1.79
		29.46	**0.80**	**0.20**	**2.11**
Long Term Stockpiles	Measured	1.39	0.46	N/A	N/A
	Indicated	0.50	0.18	N/A	N/A
		1.89	**0.39**	**-**	**-**
	Total	**31.30**	**0.78**	**0.20**	**2.11**

Note: In Situ Resource > 0.20% Cu. Long Term Stockpiles > 0.15% Cu.

The 2013 Mineral Resource Estimate is similar in tonnes to the 2012 Mineral Resource Estimate, and slightly lower in grade, due to the following key factors:

- **An additional 4.1Mt largely as a result of new data from 141 drillholes drilled in 2012;**
- **1.89Mt of stockpile;**
- **Depletion due to mining of 2.1Mt;**
- **Reduction of 3.7Mt due to a more thorough and conservative application to the economic constraints being applied to the Resource model; and**
- **Slightly lower overall grade due mainly to lower operating costs allowing a reduced economic cut off and the grade of additional Resource tonnes added.**

The new Mineral Resource estimate was completed under the 2012 JORC code by Michaela Wright of Hillgrove Resources. An external review of the Mineral Resource estimate was undertaken by the Quantitative Group Pty Ltd (QG). Chris De-Vitry of QG also provided assistance to Hillgrove during the resource estimation process. The overall aims of the QG review were to provide confidence to Hillgrove Resources that the estimate has been completed without material error and is fit for external reporting

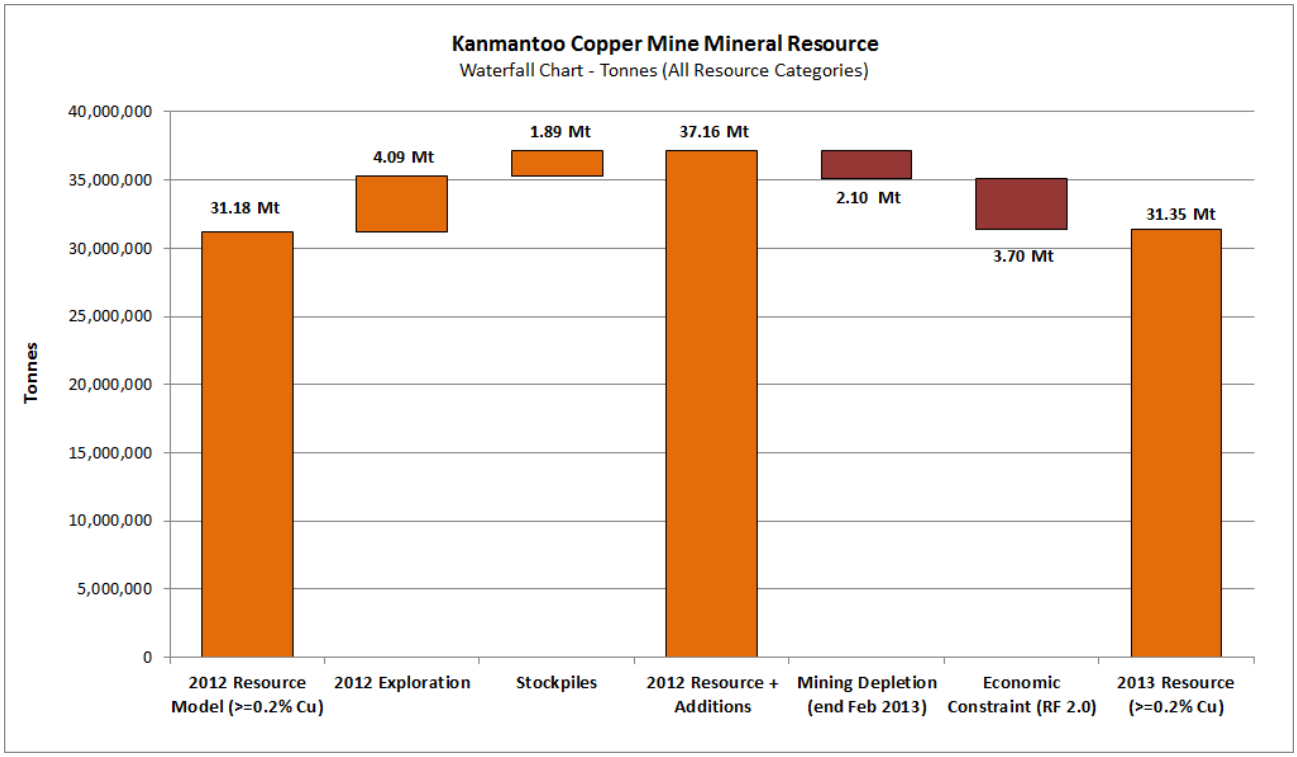
Summary

The 2013 In Situ Mineral Resource Estimation for the Kanmantoo Coper Mine has resulted in 29.5Mt at grades of 0.80% copper, 0.20g/t gold and 2.11g/t silver using a cut-off grade of 0.20% copper beneath the end of February 2013 topographic surface.

Broadly, this new Mineral Resource is a reproduction of the estimate completed in 2012. The geological interpretation has only changed significantly in areas containing new drilling data. The 2012 variography and search parameters have been used and the same estimation method (Ordinary Kriging) has been employed. The main variations between the estimates are:

- the use of a Whittle pit optimisation shell for the purpose of applying reasonable prospects of eventual economic extraction; and
- the software used to carry out the modelling and estimation (Surpac), with the use of a single search direction per object.

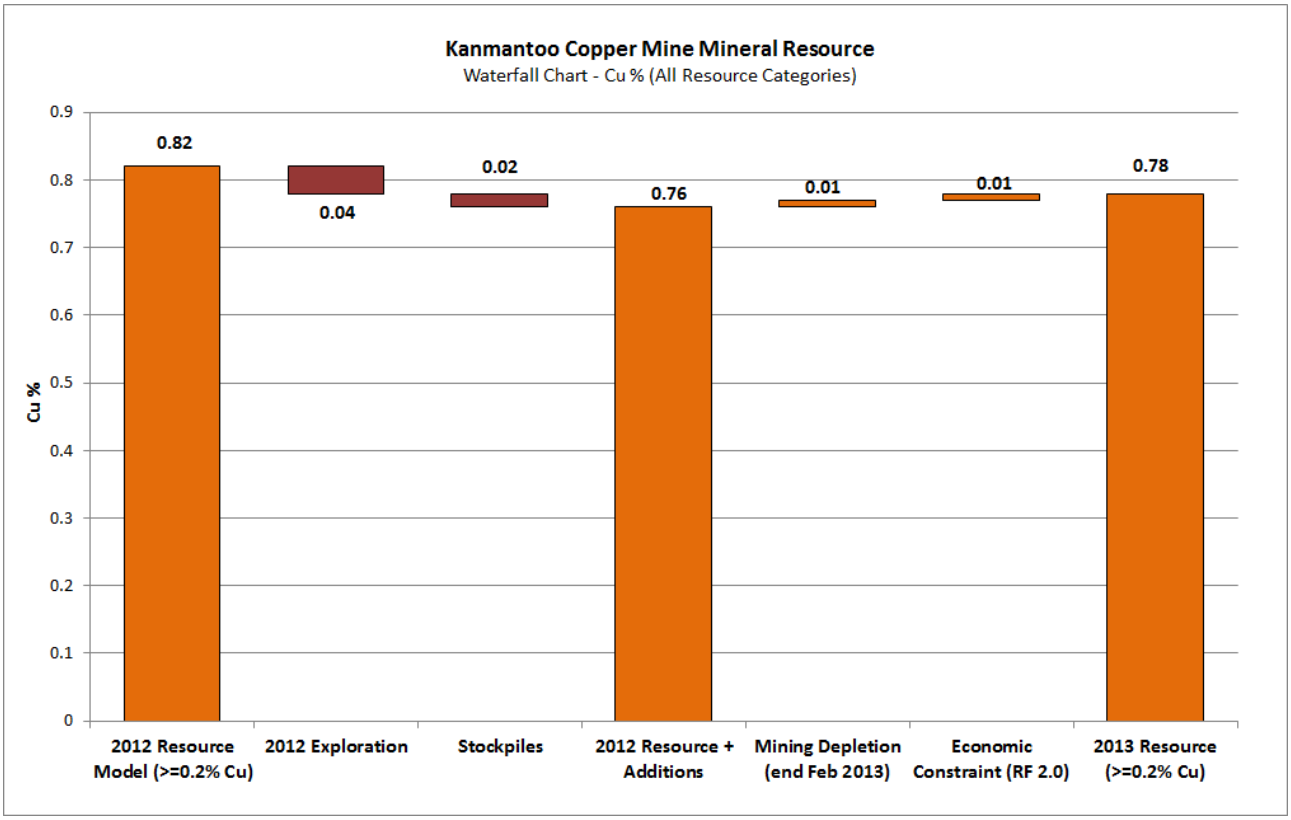
The progression of the Kanmantoo Mineral Resource from 2012 through to 2013 is represented by the waterfall charts below.



To satisfy the requirement that the Mineral Resource has reasonable prospects for eventual economic extraction it was assessed in a number of ways. The entire deposit was interpreted at a 0.2% copper cut-off grade as this is deemed the economic cut-off grade for the deposit at current operating costs. Any intercept which could not be traced either along strike for two sections or on section for a substantial distance was not included. Domain 2 in Wheal Fortune was removed from the Mineral Resource due to it's close proximity to an active railway line and an electrical substation.

A pit shell based on a revenue factor of 2.0 using the same economic and mining parameters as Hillgrove's current Reserve calculations was chosen as a constraint to report the 2013 Mineral Resource. Material outside this pit shell requires further exploration drilling. The result of the evaluation of these realistic economic parameters and constraints was a reduction of 3.7Mt as outlined in the chart above.

The Mineral Resource has been classified into the confidence categories of Measured, Indicated, Inferred and Unclassified according to geological confidence and reflect the Competent Person's view on the deposit. This confidence is based on the density of copper assay data, continuity of mineralisation and knowledge of the orebody gained during recent mining activities. Other factors considered were the estimation pass associated with the block estimation and the QA/QC knowledge of the drillhole data influencing the estimation (i.e. recent versus historic drillhole data).



Areas dominated by historical drill data were downgraded to Inferred category.

- Measured Resources have an average drillhole intercept spacing of 20 by 20m.
- Indicated Resources have an average drillhole intercept spacing of between 20 and 40m.
- Inferred Resources have an average drillhole intercept spacing over 40m.

Current operating costs, metallurgical performance and mining selectivity, were utilised to determine the 0.2% copper cut-off grade to delineate mineralised domains. Drillholes consist of both Hillgrove drilling and historic data. Of the data utilised 87% of drill holes, 77% of metres and 72% of composites are Hillgrove drilling.

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ABOUT HILLGROVE

Hillgrove is an Australian mining company listed on the Australian Securities Exchange (ASX: HGO) focused on the operation of the Kanmantoo Copper Mine in South Australia, and exploration on its Indonesian tenements. The Kanmantoo Copper Mine is located less than 55km from Adelaide in South Australia. With construction completed in late 2011, Kanmantoo is an open-cut mine which has now ramped up to a throughput of 2.8Mtpa, to produce approximately 80,000 dry metric tonnes of concentrate per annum.

Competent Person's Statements

The information in this release that relates to Mineral Resources is based upon information compiled by Mrs Michaela Wright, who is a Member of The Australasian Institute of Mining and Metallurgy. Mrs Wright 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)'. Mrs Wright has consented to the inclusion in the release of the matters based on their information in the form and context in which it appears.

APPENDIX A – JORC Table 1

Section 1 Sampling Techniques and Data

Criteria	Commentary

Sampling techniques	• Reverse circulation (RC) and diamond drillhole (DD) samples have been used for the geological interpretation and estimation.
	Hillgrove Drilling
	• 87% of drill holes, 77% of metres and 72% of composites are Hillgrove Drilling.
	• Sampling was conducted as per the Hillgrove Resources procedures and QAQC protocols.
	RC Drilling:
	• 2004 to 2007 drilling:
	  • 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:
	  • 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. The sample was then split down manually if required using a cone or riffle splitter to generate a ~3kg sample.
	  • 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.
	Diamond core:
	  • 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.
	Historical Drilling
	• Primarily sampled at 5ft intervals with minor sampling at 10ft intervals.
	• Sample collection and analytical methods are unknown.

Criteria	Commentary
	• 13% of drill holes, 23% of metres and 28% of composites are Historic Drilling
Drilling techniques	**All Drilling**

Drillhole Type	Collar Location	Number of Holes	Total Metres	% of total Holes
Diamond	Underground	34	1,791	2%
	Surface	348	76,280	24%
RC	Surface	1,071	112,364	74%
TOTAL		**1,453**	**190,435**	**100%**

Hillgrove Drilling

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	$5\frac{3}{4}$ "	NA	NA
	2011 & 2012	4.5"	NA	NA

Historical Drilling

- Hole diameter and orientation methods unknown.

Drill sample recovery

Hillgrove Drilling

RC

- Sample recovery or the occurrence of wet samples is not recorded in the drillhole database although communications with Exploration Personnel and field observations indicate that sample recovery or wet samples were rarely a problem.

Diamond

- 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 of fault zone.

Historic Drilling

- Unknown. All historical drilling is diamond.
- Overall both RC and DD samples show good recoveries and therefore there is no observed correlation between sample recovery and copper, gold or silver assays at the Kanmantoo Copper Deposit, hence sample recovery has had no discernible impact on potential sample bias.

Criteria	Commentary
Logging	**Hillgrove Drilling** • 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 diamond holes have been geotechnically logged and majority have also had magnetic susceptibility readings recorded 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 area 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 drillhole database. Additional validation is conducted automatically on import. **Historical Drilling** • Geological logging is available and includes rock type, oxidation state, alteration and mineralogy.
Sub-sampling techniques and sample preparation	**Hillgrove Drilling** RC holes • Sub-sampling as described in the *"Sampling Techniques"* section above. Diamond holes • Sub-sampling as described in the *"Sampling Techniques"* 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. **Historic Drilling** • Sampling technique and sample preparation unknown.
Quality of assay data and laboratory tests	**Hillgrove Drilling** • 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).

Criteria	Commentary
	• 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: • Coarse certified reference materials (CRMS) inserted into the drillhole sample sequence at a frequency of one in 20 and prepared as per the regular drillhole samples. • 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 typically 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 submitted for analysis 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. There are a small number of results throughout all CRM's that display anomalous results outside of the expected ranges. **Historic Drilling** • Assay method and QAQC unknown.
Verification of sampling and assaying	**Hillgrove Drilling** • Umpire laboratory checks were undertaken during 2008 and 2011 with no significant issues identified. Copper correlation was very good for both checks and correlation for gold was reasonable. • 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 automatic 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 through an automated process within the database. **Historic Drilling** • Unknown. • Unsampled historic hole intervals situated within mineralised zones that have been interpreted by neighbouring Hillgrove drilling have been treated as missing data and ignored for the purpose of the estimation. An investigation was undertaken to determine the potential impact this unsampled data would have on the drillhole composites if they were waste samples. The results showed that these unsampled zones would have very little impact on nine of the 11 domains and only a moderate impact on the remaining two (08-Main and 09-Spitfire domains).

Criteria	Commentary
Location of data points	• 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 +10º to MGA94_Zone 54 – (i.e. local grid North equates to 010º 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). **Hillgrove Drilling** • Pre-2011, all drillhole 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 drillhole collars surveyed using DGPS (Trimble R8 GNSS Model 3 - kinematic option) by onsite Hillgrove Surveyors. The accuracy of this 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. • 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 drillholes were re-surveyed using a Gyro tool. • All downhole survey methods have a priority assigned to them in the drillhole database and therefore holes with data from multiple methods have had their survey values allocated according to this priority. **Historical Drilling** • The type and accuracy of downhole surveys are unknown.
Data spacing and distribution	• Since the previous estimate, (2012 Resource, AMC Consultants Pty Ltd) 135 RC holes and 6 diamond holes have been added to the database. • 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. • Of the total raw samples intersecting the mineralised wireframes had an original sample length of 1m, 1% of raw samples were less than 1m and 14% were greater than 1m (maximum of 4m). • All samples were composited to 1m lengths prior to geostatistical analysis and Mineral Resource estimation.

Criteria	Commentary
Orientation of data in relation to geological structure	• The majority of holes are angled drillholes (dipping between -55º and -75º) drilled from (Kanmantoo local grid) east to west. The Kanmantoo local grid is oriented at +10º to MGA94_Zone 54 – (i.e. local grid North equates to 010º MGA94_Zone 54). The rotation of the local grid reflects the average 010º 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 drillholes and section provide as close to practicable "true width", representative intersections of lithology and mineralisation. • Whilst some mineralised lenses, most notably the Nugent-O'Neil lens and Emily domain are somewhat oblique to the general 010º 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.
Sample security	**Hillgrove Drilling** • 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.
Audits or reviews	**Hillgrove Drilling** • 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
Mineral tenement and land tenure status	• The Kanmantoo Copper Deposit is situated 55kms south-east of Adelaide on Mining Lease (ML) 6345 and is owned 100% by Hillgrove Resources Limited (HGO). ML 6345 is situated within Exploration Licence (EL) 4401, a lease of approximately 500km2 of which HGO also have 100% interest. • Mining Lease overlies freehold land held by Hillgrove Resources under wholly owned subsidiary Kanmantoo Properties Pty Ltd. As such there are no Native Title interests, nor are there any historical or environmental issues considered material to the Mineral Resource.

Criteria	Commentary
Exploration done by other parties	• The Kanmantoo Copper Deposit and its surrounds 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 over the current Kanmantoo Mine area through the use of ground based geophysics (Ground Magnetics and Induced Polarisation) 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 resulted in the identification of 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 and small geophysical studies which have resulted in to 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.
Geology	• 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.
Drill hole Information	• No exploration results have been reported in this release, therefore this section is not material to this report. • Notes relating to drillhole information relevant to the Mineral Resource Estimate are noted in Section 1 – Sampling Techniques & Data. • Notes relating to the geology and interpretation are noted in Section 3 – Estimating and Reporting of Mineral Resources.
Data aggregation methods	• No weighting average techniques or grade truncations have been reported in this release. • In reporting the Mineral Resource, a copper cut-off of 0.2% was used. • No metal equivalent values have been reported.
Relationship between mineralisation widths and intercept lengths	• No exploration results have been reported in this release, therefore this section is not material to this report.
Diagrams	• No diagrams have been used, therefore this section is not material to this report.
Balanced reporting	• No exploration results have been reported in this release, therefore this section is not material to this report.
Other substantive exploration data	• No exploration results have been reported in this release, therefore this section is not material to this report.
Further work	• No exploration results have been reported in this release, therefore this section is not material to this report.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	Commentary
Database integrity	• Hillgrove Resources utilise an SQL database system which is managed by the Senior Geologist. • Primary data is collected manually in the field onto paper templates and then later entered electronically into excel templates with lookup tables and fixed formatting to aid validation. Primary data is stored on Hillgrove's server and then imported into the SQL database using detailed data entry standards and database import tools. • Data is visually checked and validated prior to being imported into the SQL database and additional validation is performed on import via a number of embedded validation rules within the SQL database system. This automatic validation is configured through the use of library tables, triggers and stored procedures designed to ensure data integrity with respect to a number of fundamental quality essentials. Any data which violates these rules is rejected and quarantined until the errors are corrected • For the Mineral Resource, data tables were exported from the SQL database as comma separated files (CSV's) using export tools embedded with the database. These CSV files were then imported into a standalone Access database for the sole purpose of the estimation. Data within this new Access database was visually checked against the original SQL database dataset using the 3D software package Surpac The Access database was created using Surpac software, within this software package a number of validation rules are applied automatically to the CSV data on import. All import errors were evaluated and corrected before the data was uploaded into Access.
Site visits	• The Competent Person works at the Kanmantoo Copper mine and regularly visits the production pit. The Competent Person has also viewed a small amount of RC drill samples drilled throughout 2012 and a small quantity of diamond core. The Competent Person has also been involved in the daily grade control processes such as blast hole logging and the generation of grade control models and block outs which were used to aid interpretation of some of the mineralised zones for this Mineral Resource.
Geological interpretation	• Structural studies conducted by Hillgrove denote that the main controls on mineralisation are the north-south striking shear zones and the north-east to north-north-east striking cross-shears and tension veins. This strong structural control is evident throughout the entire deposit and often generates rapid changes to mineralisation over very short distances. • The dip of the mineralisation is generally steeply dipping (70º to 80º) towards the East. • Mining of the Spitfire and Main Zone domains together with the availability of the more detailed grade control drilling data has revealed that the mineralisation and host structures are more complex than can be detailed by the spacing of the exploration drilling. The exploration data is predominately RC in nature and therefore does not allow for accurate structural interpretation. • Mineralisation was predominately modelled on copper content with a moderate influence from lithological logging data and structural knowledge gained during mining. Due to the drilling spanning such a large time period, the variability in logging practices over time makes the lithology and alteration logs very difficult to model and interpret both on and between sections. • Throughout the deposit the geological continuity of both the mineralisation and its host structures varies significantly between domains. O'Neil, Main Zone and North West exhibit good continuity of structures, reflecting well developed shear zones and therefore giving moderate to high confidence in the interpretation throughout these areas. Remaining domains comprise primarily a series of stacked steeply dipping mineralised lenses that are variable in width both along strike and down-dip extent, only moderate confidence exists for geological interpretation of these.

Criteria	Commentary
	• Confidence reduces with depth due to the decreased drilling data density. • There are numerous intercepts above the 0.2% copper cut-off within the waste areas around each domain which have not been included as part of the mineralisation interpretation due to lack of continuity both along strike and/or on section.
Dimensions	• The Kanmantoo Copper Deposit Mineral Resource model has a north-south strike length of 2.1km, a maximum width of approximately 1km east-west and extends 620m vertically. Within this area a total of 95 mineralised objects have been modelled with individual objects ranging in length from 20 to 580m along strike and 20 to 600m down-dip.

Estimation and modeling techniques	**Modelling**
	• The cut-off date for drill hole data inclusion into the Resource model was 30th November 2012.
	• The three dimensional mineralisation wireframes were completed using Surpac 6.3.
	• Oxidation state surfaces were interpreted on 50m spaced east/west sections throughout the entire block model extent with interpretation being based on a combination of logging codes and drillhole sulphur assays. Cut-off's for the oxidation states are as follows:
	  • Oxide S < 0.6%
	  • Transitional S > 0.6% and < 0.8%
	  • Fresh S > 0.8%
	Domain interpretation updates were completed using 10m and 20m spaced sections, dependent on drillhole spacing.
	• Wireframe objects for domains 01 (Paringa), 03 (O'Neil), 07 (Falcon), 08 (Main Zone), 10 (North West) and 11 (Slot-Extension) were updated to incorporate new drill data. All other domains were examined to ensure they honoured existing drillhole data and were adjusted slightly if required.
	• Modelling of mineralisation was completed using copper values. Based upon the current operating costs, metallurgical performance and mining selectivity, a 0.2% copper cut- off grade was utilised to delineate mineralised domains.
	• Within the mineralised domains, waste intercepts of up to 3m were incorporated to determine ore grades. Major geological domains were interpreted predominately on mineralisation, with some influence from lithology and structural data.
	• Sectional interpretations were extrapolated to a minimum of 25m down-dip of the deepest drillhole if drilling did not close off mineralisation and half the drillhole spacing if extrapolating between a mineralised and an un-mineralised drillhole. Interpretations were often extended beyond 25m down-dip of intersections were drillholes on adjacent sections intersected mineralisation at deeper depths. Along strike, mineralisation was extrapolated to half the drill section spacing at the termination of lenses.
	Ore Estimation
	• Block estimation and geostatistical analysis was completed within the Surpac 6.3 software package.
	• Ordinary Kriging (OK) was used to estimate copper, silver and gold grades.
	• Sulphur, bismuth and arsenic were additional attributes interpolated in this Mineral Resource, sulphur being used to determine potential acid forming (PAF) versus non-acid forming (NAF) waste for waste management planning. The confidence in the estimation results for these three elements is low due to the small size of the sample dataset and the lack of QAQC data for these elements, therefore they are not reported in the Mineral Resource.

Criteria	Commentary

- Block size was defined by the nature of the orebody, drillhole spacing and the selective mining unit (SMU) as it was a requirement that the model be

Type	Y	X	Z
Minimum Coordinates	6113700	317300	601
Maximum Coordinates	6115800	318700	1285
User Block Size	10	4	3
Min. Block Size	5	2	3
Rotation	0	0	0

suitable for regularisation to a block size representing the SMU on completion for reserve reporting.

- The mineralised object wireframes were used as hard boundaries for interpolation.
- One metre assay composites were used for interpolation and only assay composites with 50% or more intersecting an object were included in the estimation of the blocks within that object.
- The variography and search parameters from the 2012 Mineral Resource Estimate were used for this estimation update as the increase in new drillhole data was only small. New variograms were created and investigated but were of no better quality than those used for the 2012 Mineral Resource.
- New search orientations were calculated for each object as the previous estimate employed a dynamic search ellipse and Surpac does not have this function. For copper, gold and silver, a moderate confidence level exists for the variography due to the relatively poor quality of the variograms.
- Three estimation passes were employed for all domains, each subsequent pass having an increased search size. These search parameters were based on those used for the previous 2012 Resource Estimate and determined using variography for each element.

Copper, Gold and Silver		2013 Surpac Format		
		Primary	Secondary	Tertiary
Search Ellipse Dimensions (radius)	Down Dip (semi-major)	1	1	1
	Along Strike (major)	60	120	600
	Across Strike (minor)	7.5	7.5	7.5
Maximum number of samples		8	8	2
Minimum number of samples		25	25	25

- For copper, all blocks were filled by the three search passes. Silver and gold had a small number of blocks left un-estimated; these blocks were allocated the mean value for their domain and relevant oxidation type. Where no data existed for a complete domain, the mean grades of the entire deposit
- Each element within each domain was analysed for the presence of extreme high values and top cut values were applied on an element and domain basis where applicable. Top cut values were determined using basic statistical analysis, assessment of log probability plots and spatial evaluation of high outliers.
- Validation of the estimation was completed on a domain by domain basis and included a visual comparison (on 20m spaced sections) of block grades against composite drillhole grades for the entire deposit and block model reporting to ensure all attributes were populated for all blocks with an appropriate value . Basic statistical evaluation of the mean block grades against mean declustered drillhole grades was carried out and swath plots were

Criteria	Commentary
	generated to illustrate average drillhole grades versus block mean grades on a 20m section spacing throughout each domain. These checks indicate that there is no material error within the estimate. • Reported Resource numbers includes material from all three oxidation states in oxide, transitional and fresh material. • Reported Resource numbers includes material from all three oxidation states in oxide, transitional and fresh material. • Reconciliation against previous Mineral Resource estimates and the Grade Control Blockout data has been carried out on a bench-by-bench basis for each production pit. The 2013 Mineral Resource from the 2008 topographic surface down to the current mining bench (SPF_1099RL and KVN_1096RL) estimates 9% more tonnes with a copper grade 1% higher than estimated by the grade control block outs for all fresh ore (0.2% copper cut-off) resulting in an overall 10% increase in estimated copper metal tonnes from the 2013 Mineral Resource estimate. • Reconciliation work on Mineral Resource against Mill production is still ongoing. **Waste Estimation** • Waste estimation was completed for the sole purpose of estimating waste blocks directly adjacent to the mineralised zones. This was to enable a more accurate result for the regularisation of the Resource Model on completion for Reserve calculations. The waste estimation should not be used for any other purpose. • OK was used to estimate copper, silver and gold grades within the waste blocks. • Sulphur, bismuth and arsenic were additional attributes interpolated in this Mineral Resource, sulphur being used to determine potential acid forming (PAF) versus non-acid forming (NAF) waste for waste management planning. The confidence in the estimation results for these three elements is low due to the small size of the sample dataset and the lack of QAQC data for these elements, • Variography was completed for each element and a single pass search identical to the first pass of the ore estimation was used to estimate blocks, all un-estimated blocks were then assigned a low grade default • A copper top-cut of 4% was used and drillholes were composited to 1m for the interpolation.
Moisture	• Tonnages are estimated on a dry basis.
Cut-off parameters	• A 0.2% copper cut-off has been applied for both modelling of mineralisation and reporting of Mineral Resources. This grade is considered by Hillgrove Resources to be a conservative economically viable lower cut-off grade.
Mining factors or assumptions	• The Kanmantoo Copper deposit is currently mined by open pit methods and this method has been assumed for any future mining potential. • The mineralisation stated within this Resource estimation is located entirely within Mining Lease ML 6345 (Kanmantoo). The Mine Lease expires on 6th September 2019 and is currently in good standing. • Internal dilution of up to 3m has been incorporated in the ore wireframe where necessary to allow for continuity of deposits although no dilution or ore loss has been modelled in the Resource model or applied to the reported Mineral Resource. • The mineralisation has been interpreted using a cut-off of 0.2% copper, considered to be a conservative economic cut-off for the deposit.

Criteria	Commentary

	• Domain 02_Wheal Fortune was removed from the Mineral Resource as due to its close proximity to an active railway line and electrical sub-station it is considered unlikely that it will become economic in the future.
	• Only mineralised objects which could be traced over at least 2 sections were incorporated into the mineralisation wireframe.
	• The analysis of economic potential has assumed a mine life expectancy of approximately 10 to 15 years, consistent with current Reserve information. The Mineral Resource has been spatially constrained by a revenue factor 2.0 (RF2.0) Whittle pit optimisation shell. The main inputs into this optimisation are:
	  • Pit slope, mining costs, metallurgical factors are as per the pit optimisations parameters used for the Kanmantoo Cooper Deposit Reserve Reporting;
	  • Includes Measured, Indicated and Inferred material;
	  • Loss/dilution applied by block regularisation to 4m x 5x x3m (XYZ) which is considered to be consistent with the current SMU;
	  • AUD:USD exchange rate applied of 0.87;
	  • Ex-mine gate costs are taken into account based on varying concentrate grades - overall deductions and ex-mine gate costs are in the order of US$1200/t copper metal;
	  • Metal prices: US$7750/t copper, US$1675/Oz gold and US$30/Oz silver. To generate the RF2.0 shell this copper price was simply doubled to US$15,500/t Cu to facilitate a doubling of total revenue. In reality it is not expected that the copper price would have to double, the doubling of revenue would occur due to changes in any other combination of parameters.

Metallurgical factors or assumptions	• Oxidation state has been included in the model due to the various oxidation states providing different recovery rates during processing. The stockpiled material reported in the Mineral Resource comprises oxide, transitional and fresh materials within varying grade bins. Of the reported stockpile material, 45% is fresh ore, 18% is transitional ore and 37% is oxidised material. • The Kanmantoo Copper Mine Processing Plant has been processing the Kanmantoo Ore for approximately 1.5 years with as expected recoveries for copper, gold and silver. These recoveries form the basis for future performance that has been assumed in the determination of the reasonable prospects for eventual economic extraction of this resource.
Environmental factors or assumptions	• The mineralisation that is the subject of this Mineral Resource is located entirely within Mining Lease ML 6345 (Kanmantoo). This Mining Lease overlies freehold land also held by Hillgrove Resources under wholly owned subsidiary Kanmantoo Properties Pty Ltd. As such there are no Native Title interests, nor are there any historical or environmental issues considered material to this Resource estimate. • Waste dumping areas and tailing storage facilities (TSFs) have been planned, regulatory approved and already partially constructed within the current mining lease. • Both the mine and processing plant are in full operation under full regulatory approved environmental licences and permits. • Future approvals will be required to allow the complete extraction of the Resource.
Bulk density	• Wax-coated Archimedes method density sample results were used to calculate density values for this Mineral Resource. The density results for 386 half core samples (a mixture of NQ and HQ in size) were available for density calculation. • The density data results were divided by both domain and oxidation state and the datasets were investigated for outliers and/or suspect values. Any suspect values were examined in terms of their lithology and removed if it was deemed appropriate. The mean of the dataset was then calculated and

Criteria	Commentary
	applied to blocks within the block model on the basis of oxidation state and domain. Density values were assigned to the model once the estimation process was complete. • Eight of the twelve domains contained limited density sample data, for these domains the overall mean of all density data values throughout the deposit for the appropriate oxidation state was applied.
Classification	• The Mineral Resource has been classified into the confidence categories of Measured, Indicated, Inferred and Unclassified according to geological confidence and reflect the Competent Person's view on the deposit. This confidence is based on the density of copper assay data, continuity of mineralisation and knowledge of the orebody gained during recent mining activities. Other factors considered were the estimation pass associated with the block estimation and the QA/QC knowledge of the drillhole data influencing the estimation (i.e. recent versus historic drillhole data). Areas dominated by historical drill data were downgraded to Inferred category. • Measured Resources have an average drillhole intercept spacing of 20 by 20m. • Indicated Resources have an average drillhole intercept spacing of between 20 and 40m. • Inferred Resources have an average drillhole intercept spacing over 40m. • Resource classification categories were applied manually using Block Maths on an object by object on completion of estimation. This manual method allowed each of the 95 objects to be visually inspected individually and a review of the geological confidence to be carried out.
Audits or reviews	• A review of this Mineral Resource was completed in May 2013 by Quantitative Group and the model was considered suitable for external reporting. The economic parameters used for determining "economic potential" were not part of this review.
Discussion of relative accuracy/ confidence	• Reconciliation against previous Mineral Resource estimates and the Grade Control Blockout data has been carried out on a bench-by-bench basis for each production pit. The 2013 Mineral Resource from the 2008 topographic surface down to the current mining bench (SPF_1099RL and KVN_1096RL) estimates 9% more tonnes with a copper grade 1% higher than estimated by the grade control block outs for all fresh ore (0.2% copper cut-off) resulting in an overall 10% increase in estimated copper metal tonnes from the 2013 Mineral Resource estimate. • Reconciliation work on Mineral Resource against Mill production is still ongoing.