Chinova Resources Limited

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Chinova has completed an updated resource estimation using drilling results from several recent drilling programs spanning the time from October 2016 to October 2017.

The model has been determined in accordance with JORC code 2012 and estimated by a competent Person as defined by the JORC code.

Updates to geological models and identification of sub optimal drill coverage at shallow depths and at the northern strike extensions from the mined part of Kulthor, led to recommencement of drilling from October 2016 after mining was completed in October 2015.

The 2016 / 2017 drilling has confirmed a variably, but predominantly deeply weathered profile beneath the Mesozoic cap units, with the presence of secondary copper species. Of significance is the gold content, which has not suffered depletion and may in fact show enrichment within the oxidised and transitional profile. Enhanced gold grades are also a feature of the North Lode mineralogy which shows in general, higher gold grades than copper. The reverse ratio is usually true for the other lodes at Kulthor.

A summary of changes from the previous 2010 resource estimate includes;

- 91 new holes drilled in the 2016 / 2017 programs including 11 core intercepts.
- Re-modelling the copper domain wireframes at 0.75% eCu cut-off.
- Inclusion of data in weathered domain.
- Metallurgical testwork on oxidised and transitional ore (ongoing).
- eCu% now calculated by using a factor of 0.8 x Au ppm

The new resource estimate shown as Table 1, is not comparable to the previous 2010 resource estimate shown on Table 2, due to significant changes in the model parameters including:

- Underground mining of the Kulthor resource (leading to resource depletion).
- Development of geological and structural models on ore controls at Kulthor.
- Inclusion of new data:
  - 5,437 sludge samples,
  - 94 face samples,
  - 548 UG DDH’s (~32 were included in previous estimate)
  - 58 surface DDH’s, and
  - 90 surface RC holes.
- Extension of resource along strike, further to the North and larger block model dimensions.
- Inclusion of Oxide and Transitional resources.
- Updating of grade and oxidation wireframes.
- Increase in the eCu% gold factor from 0.6 to 0.8.
- The use of a lower cut-off due to the increase of close to surface resources.

Table 1: Chinova 2017 - Resource Estimate @ 0.75% eCu Cut off - by Classification

Lease	Classification	Mt	Cu %	Au ppm	eCu%	Density
Kulthor 2017 depleted	Measured	20.98	0.90	0.55	1.34	2.75
	Indicated	12.31	0.81	0.64	1.31	2.89
	Sub-total	**33.29**	**0.86**	**0.58**	**1.33**	**2.80**
	Inferred	7.90	0.79	0.54	1.22	2.91

Note: eCu% is calculated by 1% Cu + (0.8 x ppm Au

Table 2: Ivanhoe 2012 – Resource Estimate @ 1.2% eCu Cut off (August 2012)

Lease	Classification	Mt	Cu %	Au ppm	eCu%	Density
August 2012 (undepleted)	Measured	3.0	1.7	1.0	2.3	3.1
	Indicated	4.5	1.5	1.0	2.1	3.0
	Sub-total	**7.5**	**1.6**	**1.0**	**2.2**	**3.0**
	Inferred	5.4	1.3	0.9	1.9	3.0

Note: eCu% is calculated by 1% Cu + (0.6 x ppm Au)

Table 3 shows the estimate broken down into oxidation categories.

Table 3: Chinova 2017 - Resource Estimate @ 0.75% eCu Cut off - by Oxidation Profile

	Classification	Mt	Cu %	Au ppm	eCu%	Density
Oxide	Measured	-	-	-	-	-
	Indicated	3.10	0.79	1.03	1.61	2.75
	Sub-total	**3.10**	**0.79**	**1.03**	**1.61**	**2.75**
	Inferred	0.86	0.96	0.81	1.61	2.84
Transitional	Measured	-	-	-	-	-
	Indicated	1.75	0.83	0.57	1.28	2.84
	Sub-total	**1.75**	**0.83**	**0.57**	**1.28**	**2.84**
	Inferred	0.97	0.77	0.65	1.29	2.89
Fresh	Measured	20.98	0.90	0.55	1.34	2.75
	Indicated	7.46	0.81	0.49	1.20	2.96
	Sub-total	**28.44**	**0.87**	**0.54**	**1.30**	**2.81**
	Inferred	6.07	0.77	0.49	1.16	2.93

Note: eCu% is calculated by 1% Cu + (0.8 x ppm Au)

Table 4 shows the resource estimate from above the Kulthor underground workings to surface.

Table 2: Chinova 2017 - Resource Estimate by Open Pit and Underground potential

mRL	Classification	Mt	Cu %	Au ppm	eCu%	Density
1260 – 1100 mRL (0.75% eCu)	Measured	0.52	0.82	0.63	1.33	2.75
	Indicated	3.93	0.79	0.94	1.54	2.75
	Sub-total	**4.46**	**0.80**	**0.90**	**1.51**	**2.75**
	Inferred	2.04	0.75	0.72	1.33	2.86
1100 – 900 mRL (1.20% eCu)	Measured	2.58	0.98	0.68	1.52	2.96
	Indicated	1.60	1.04	0.67	1.58	2.90
	Sub-total	**4.18**	**1.01**	**0.67**	**1.54**	**2.94**
	Inferred	1.45	1.08	0.68	1.63	2.91

Note: eCu% is calculated by 1% Cu + (0.8 x ppm Au)

Figure 5-3: Kulthor cross section showing lithology and structural controls (Hinman 2012).

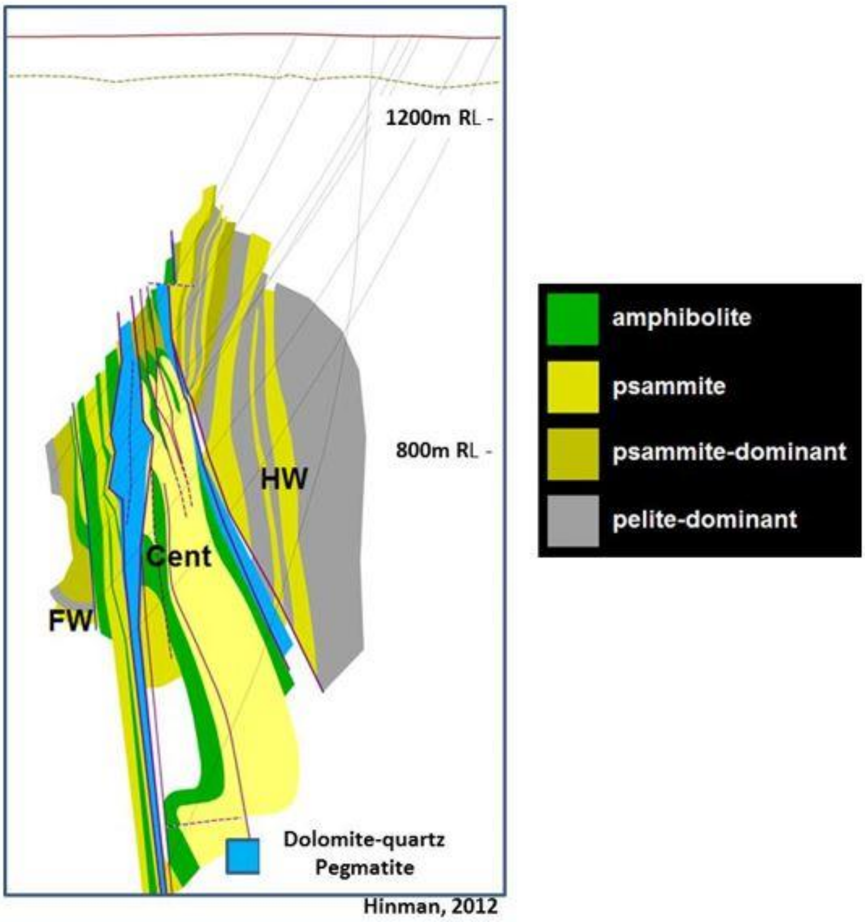
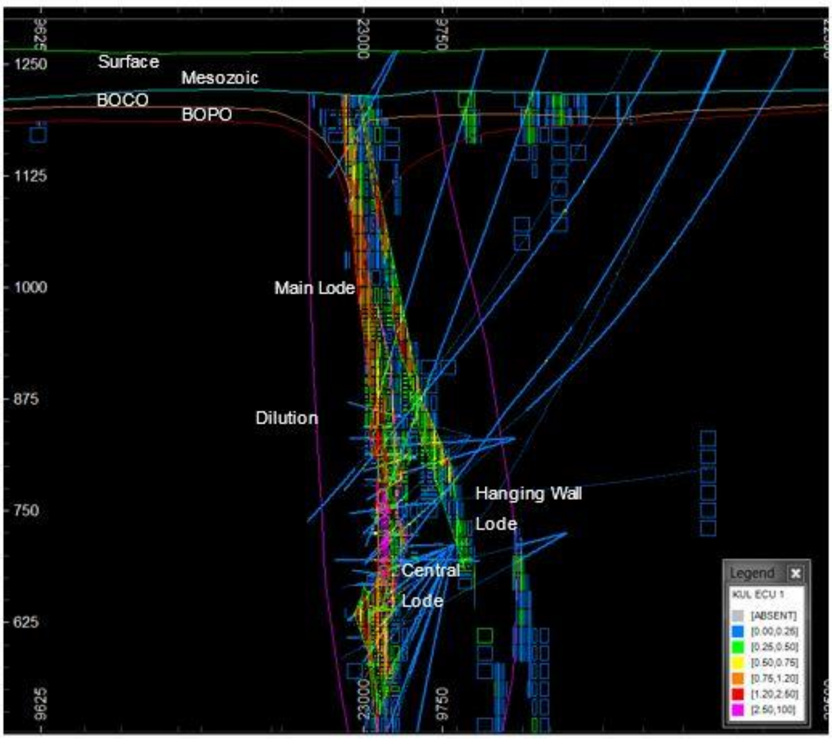


Figure 12-8: Section 11 – Kulthor Main Lode (+/-25m).



APPENDIX 1: JORC TABLE 1

1. JORC TABLE 1

1.1 Section 1: Sampling Techniques and Data

Criteria	Explanation
Sampling techniques	Sampling of the deposit dates to 1991, and includes various exploration and mining companies. Chinova has access to all exploration work. The deposit was sampled by surface diamond drillhole coring (DDH), underground diamond drillhole coring (DDH), surface reverse circulation (RC) holes, with a small amount of surface air core drilling, the results of which are not included in this study. **Diamond Drill Core Sampling** **Placer / Barrick (1991 – 2010)** • Pre-collars were sampled every 2 metres and at ten metres composited prepared, for assaying. Diamond Core was sawn in half and sampled one metre or half metre intervals or to geological contacts. Analysed at the onsite mine lab. **Chinova (2010 - 2017)** • One 1 or 2 metre intervals, the right-hand half of the drill core, as one looks down hole, was collected for assaying, and if a core duplicate was to be collected, then it was taken using the left-hand half of the drill core. If core was excessively broken, a stainless-steel spoon was used to collect one-half of the chips along the side. Sample preparation and assaying was completed by ALS, in Mount Isa. **Reverse Circulation Cuttings Sampling** **Chinova (2010 - 2017)** • Chinova, the cyclone output from one metre intervals was split at the cyclone to obtain an eighth (10 to 15%) split subsample, which was placed in cloth bags. Because a splitter was not available, for some of the earlier samples, they were bagged in their entirety, and then several spear samples were taken from each bag and placed together in cloth bags. When the cloth bags dried, the lumpy portion of the cuttings was broken inside the bag; the bag was tossed several times to mix the cuttings; and, finally, the bag was weighed. A scoop, comprising about 250 ml, was taken from each cloth bag for compositing, and

	scoops from two consecutive intervals were combined for a two-metre composite. The composited samples were compiled into dispatches as described earlier. Sample preparation and assaying was completed by external offsite Lab in Mount Isa.
Drilling techniques	• Various exploration and mining companies have drilled at the Kulthor deposit since 1991, which totals 6,416 drill holes. Most of the resource drilling is by Diamond drill holes (219 surface and 548 UG holes) then Reverse Circulation (116 holes) and Others (5,533, mostly sludge samples). The majority of the holes targeted the deeper ore and were drilled by Chinova and previous operators. Chinova has drilled most of the RC, along strike and up-dip of the Kulthor mine. • Most drilling is oriented 270^0 (OMG) and dipping -60^0 West. Holes drilled at the north end of Kulthor are oriented at 305^0 (OMG) to accommodate the change in the strike. • The nominal drill spacing is based around 50m spaced section lines with drill collars every 50m along the lines. • In parts, infill RC drilling is at 25m (N) by 25m (E). • Underground drilling at Kulthor is also nominally 25m (N) by 25m (E) by 30m (RL).
Drill sample recovery	Logging methodology has remained consistent through the exploration life of the project and is described below for the current Chinova practice: • Core is metre marked, derived from measurements based on driller's core blocks. Core loss and gain was noted between the block intervals. • Diamond core recovery (Chinova) is 98.5% for the Kulthor deposit. • **Examination of the data shows there no obvious evidence of grade/sample recovery bias in the data i.e. high core loss does not correlate with high grade.**
Logging	Logging methodology has remained consistent through the exploration life of the project and are described below for the current Chinova practice: • Core drilled pre-2009 was loaded into trays and transported to the processing shed located approximately 3 km from Kulthor. • Core drilled after 2009 was geo-technically logged at the rig before the core was loaded into trays. It was then loaded into trays and transported to a processing shed located approximately 3 km from Kulthor. After 2012, a new processing shed located only 1 km from Kulthor was used. • Routine core logging included; recovery, orientation, magnetic susceptibility measurements, density measurements (generally every 10 m) and logging of geology, alteration, minerals, structures, and weathering. Where practical, similar measurements are made for RC chips. • All core logging was recorded at the core shed directly into notebook computers connected to an electronic database acQuire via a network of wireless routers.

	• Digital photography of the wet and dry core was done in a specifically designed photographic jig. Photographs are stored on a computer server, for future reference.
Sub-sampling Techniques and sample preparation	Sub-sampling techniques and sample preparation have remained consistent through the exploration life of the project and are described below for the current Chinova practice: • RC chips are riffle split at the drill rig. The RC samples are screened by a pXRF unit • Diamond core samples were obtained from NQ core pre-2009 and then HQ core. • Core is cut longitudinally with a diamond blade saw. Pre-2009 core was cut with a diamond brick saw. After 2009 core was cut with an Almonte “Auto” saw. • Core is marked with a cut line to ensure proportional sampling of one side of the core. • Samples are bagged in numbered sample bags and routinely trucked in “bulka bags” of 70 samples to an off-site commercial laboratory in Mt Isa. • All sample preparation was at an offsite commercial laboratory at Mount Isa. o The first stage coarse-crushing used a 9mm jaw setting, for approximately 70% passing 6 mm o Split by 1 cm riffle splitter for a ½ split to obtain 3 to 4 kg o Fine Boyd crushing to 90% passing 2 mm o Split to obtain a 1 kg sample o Pulverizing with LM2 (or LM5 in some cases) to a nominal 75µm. • QAQC procedures are discussed below in “Verification of sampling and assaying”.
Quality of assay data and laboratory tests	QAQC methodology and auditing have remained consistent through the exploration life of the project and are described below for the current Chinova practice: • A single independent assay service provider has been used during the project with a sample preparation facility in either in Mt Isa or Townsville (ALS). • Depending on the assay suite required, assays were undertaken in one of four laboratories located in Mt Isa, Townsville, Perth and Brisbane. • Four main assay suites were used: o Cu requiring digest with a standard two acid digest (Geochemical) o Cu requiring digest with a standard three acid digest (Ore Grade) o Base metals and geochemical trace elements requiring a standard two acid digest (Geochemical). o Au by fire assay (Ore Grade). • A 100-sample batch (for RC) and 70-sample batch process for core is maintained. This also enables regular inclusion of QAQC with each despatch and validation before acceptance of the assay results into the electronic database.

- For most of the project a 70-sample despatch comprised of:
  - 59 routine samples
  - 4 standard reference materials (SRM) (randomly inserted at site).
  - 2 field blanks (randomly inserted at site).
  - 2 pulp duplicates (from the 59 routine samples).
  - 2 coarsely-crushed duplicates (from the 59 routine samples)
  - 1 core duplicate (i.e. both sides of the core are sampled)
- Assay results were electronically communicated from the laboratory and after checking by a Chinova QAQC administrator, they were loaded into the electronic database. The tables below show the total Cu and Au analyses that were completed over the life of the deposit.

Method	Count	%	Company
Cu_OG46%	6,836		Chinova
Cu_OG48%	6,497		Other
Cu_OG62%	3,500		Chinova + Other
Cu_3_acid%	6,248		Other
Cu_XR01%	203		Other
Cu_MEOG46%	8,548		Chinova + Other
Ore Grade Method	**31,832**	**39%**	
Cu_MEICP41s_ppm	35,119		Chinova + Other
Cu_MEICP61s_ppm	15,270		Other
Cu_IC581_ppm	3,725		Other
Cu_IC587_ppm	3,377		Other
Cu_glg_ppm	3,778		Other
Cu_Orig_ppm	1,331		Other

ICP Method	**50,213**	**61%**	
Cu_CUCNPH06%	846		Chinova + Other
Cu_CUSPH06%	846		Chinova + Other
Cu_CURPH06%	846		Chinova + Other
Cu_CUTPH06%	846		Chinova + Other
Sequential Copper Leach	**846**		

Method	Count	%	Company
Au_ AA22_ppm	8,678	11%	Chinova + Other
Au_AA25_ppm	38,054	50%	Chinova + Other
Au_AA26_ppm	29,083	39%	Chinova + Other
Au_AA25D_ppm	206	0.25%	Chinova + Other
Au_AA26D_ppm	1,124	2%	Chinova + Other
Ore Grade Method	**75,815**	**100%**	
AuN_SCR22AA_ppm	361	0.5%	Chinova + Other
AuP_SCR22AA_ppm	361	0.5%	Chinova + Other
AuT_SCR22AA_ppm	361	0.5%	Chinova + Other
Au_AU-SCR22_ppm	50	0.1%	Other
Screened Fire Assay	**361**	**0.5%**	

	Certified Reference Material (CRM) • Tolerance limits for reference material were set at two and three standard deviations from the round robin mean value. A CRM was recorded as a failure when the batch result was beyond three standard deviations from mean, or any two consecutively assayed CRM's were beyond two standard deviation limits on the same side of the mean. All 35 samples in the batch are re-assayed by ALS if a failure is noted; requests for repeats are uncommon and usually resolved by the re-assay. A minor problem was also evident in the standard sample weight being too small to allow for re-assay the required pulp weight. • Blanks are inserted into despatches at regular intervals; analysis identified no issues with smearing **Duplicates** • 959 duplicate analysis on core, crushed samples, and pulps have been completed and identified no issues with sampling representatively. • Laboratory duplicate assays were undertaken by the commercial laboratory and reported with the assay results. These were duplicate assays of the sample pulps, used for internal quality control at the laboratory. • The number of Duplicate Samples by assayed by the commercial laboratory ALS for the period 2016 -2017 is:

Duplicate Type	Count Cu (OG46)	Count Cu (ICP41)	Count Au (AA26)
Laboratory Repeat	223	1,193	7,290

	Other • Umpire checks to a third-party laboratory were completed on a regular basis by Chinova. • Overall the QAQC assays represent 22% of all results, this is better than the current industry standard. All QAQC results are monitored and procedures are followed to repeat assays which show imprecision. Assay bias trends were not found to be significant. Further discussion on these results is shown in section 3, "Audits or Reviews". • Laboratory inspections were generally conducted at least once a year by project personnel. • Pulp residues of each sample (master pulps) are stored on site in a weatherproof warehouse. • Drill core is stored in core trays catalogued with palette storage. • RC samples (rejects) are also catalogued and stored in the core farm on palettes.
Verification of sampling and assaying	• Two of Chinova's RC holes were twinned with DDH holes. The holes twinned were KUR0213 andKUD0245 and KUR0229 and KUD0247. A comparison of the results from these twinned holes has shown that while the gross mineralisation is similar there is significant variation between holes at the short-range sampling interval. This is partly due to short strike fracturing,

	mineralisation and oxidation. It is also apparent that hole KUD0247 was terminated prematurely, not covering the full intersection width of the mineralisation. • Previous companies routinely submitted samples to an Umpire laboratory to check the performance of the primary laboratory. Reports were issued on a yearly basis prior to Chinova. No issues were identified by these checks • Where assays were repeated by Copper sequential leach methods the results are comparable, with no bias exhibited. • Primary data was captured on tough books laptops using industry standard drill hole software. Data entry was auto-validated as data was entered e.g. no overlapping samples or invalid geology codes allowed. • The primary data is always kept and is never replaced by adjustment or interpreted data. A set of priority codes is used to flag the accuracy of the data. Changes in the database are tracked by date and user.
Location of data points	• The Osborne and Kulthor deposits have utilised a local grid system, established early 1990's. The grid system was used during previous mining operations and is still used for resource estimation and engineering work. Chinova uses MGA94 grid system. No issues have been found in the transformation of the two grids. Grid transformation is done either inside the acQuire database or Mining packages (Datamine, Micromine and Surpac). • Chinova undertook to survey drill hole location of the Chinova holes drilled and some historical holes by a surveyor in 2014. The remainder of historical holes still require to be re-surveyed. • Topography data is provided by a detailed LiDAR survey procured by Chinova in 2004. This provides sub-meter topography accuracy implemented in a topography surface model using 1 m contours. • Magnetic interference can cause issues; however, much of survey data has been collected using non-magnetic survey tools (gyro). Most holes have a combination of survey techniques employed so comparison of the dataset forms part of data quality assurance. Kulthor deposit has a very low magnetic response. • Chinova, a combination of non-magnetic and magnetic down hole survey tools was used. • After 2009, Chinova regularly checked downhole tools and compasses against a test survey orientation cradle. In the case of discrepancy, the gyro or compass was sent for service and recalibration.
Data spacing and distribution	• Drill hole spacing is varied within the deposit, with 25m spacing underground and in parts of the surface, increasing to +50 m drill spacing at the northern and southern extremes of the deposit. • Some RC samples outside the mineralisation zones were composited before assaying.
Orientation of data in relation to geological structure	• Mineralised lenses dip at approximately 75° to the east, and can be sub vertical. • The Kulthor mineralisation forms various lodes that range from only a few metres to +20 metres in width. • At Kulthor, surface drill holes are drilled west, perpendicular to the strike and across the dip. Surface drill holes inclined between 60° and 80° to the west. This results in oblique intersections in holes. • All core, where possible is oriented using Reflex ACT I or II RD orientation tool with stated accuracy of +/-1% in the range of 0 to 88˚.

Sample security	• Bulka bags were zip tied with security tags and checked on receipt at the Commercial Laboratory for tampering or damage. • The Commercial Laboratory is notified electronically of the sample despatch. The shipments are examined on arrival at the laboratory and Chinova receives confirmation of the state of security seals on bags, the samples comprising each batch, and laboratory report numbers are assigned to each batch.
Audits or reviews	• The sampling techniques and data collection process are of industry standard and have been subject to multiple internal and external reviews on many aspects of the sampling and assaying procedures used by Chinova.

1.2 Section 2: Reporting of Exploration Results

Criteria	Explanation
Mineral tenement and land tenure status	• The Kulthor deposit is located on ML90040 (1770.9 ha), ML90158 (2152 ha) and ML90057 (64.4 ha) respectively. These leases are contiguous andML90040, 90158 and part of 90057 are within exploration lease EPM9624 which was originally granted in 1993. • After numerous company name changes, the leases are now held in the name of Chinova Resources Osborne Pty Ltd, a 100% owned subsidiary of Chinova Resources Pty Ltd. • ML90040 and ML90057 were granted before the Native Title Act 1993 (Cth) (NTA) commenced and are considered valid intermediate acts. These MLs will continue and be renewed without reference to native title. A Native Title Agreement is in place for any mining on ML90158.
Exploration done by other parties	• Exploration at Kulthor has been carried out by numerous companies over many decades. Work has included airborne, ground and downhole geophysics and surface and air core basement geochemistry. Numerous regional and deposit scale studies have been completed including structural, weights of evidence, petrological and geochemical work. Drilling by pre Chinova companies included a range of drilling types and sample procedures but are generally in keeping with those used by Chinova and meet industry standard. • Pre-1991 exploration work was completed by CSR and others, following up ironstone targets. • From 1991 to 2005 Placer completed exploration including the discovery hole at Kulthor. Placer completed over 150 DDH and 35 RC holes totalling over 87,500m. Placer brought the project to Pre-Feasibility status by the time of Barrick's takeover in 2006. • From 2006 to 2010 Barrick continued to assess the viability of Kulthor. In 2009, Barrick developed a 2km decline from Osborne to Kulthor and drilled UG holes from the end of the drive some 100m from the Kulthor mineralisation. After the GFC, Barrick placed their entire stake in the district on the market, to be taken up by Ivanhoe.

	• Ivanhoe took over the project in 2010 and by 2011 had approved the mining of Kulthor and Osborne remnants. From 2011 to the closure of the Kulthor operation, Ivanhoe and subsequent owners (in short succession Inova and Chinova) mined Kulthor and drilled 534 UG DDH for grade control as well as face and sludge sampling. Nearly 50 DDH and RC holes were drilled from surface, exploring for extensions or repeats of the Kulthor orebody. • In 2016 and 2017, Chinova tested near surface and northern extensions to the Kulthor ore body by RC (79 holes at 13,458m) and DDH (11 holes at 11,293.9m) drilling.
Geology	• Copper mineralisation is hosted in sheared and brecciated quartz – carbonate lodes with a metamorphic package of rocks belonging to the Proterozoic Mt Norna Quartzite of the Soldiers Cap Group in the Eastern Fold belt of the Mount Isa Inlier or the equivalent New Hope Sandstone of the Kuridala Group. The mineralisation is concealed under Mesozoic cover units; (Longsight Sandstone and Wilgunya Formations. • The project area consists of primary copper sulphide in the fresh domain with derivative secondary copper oxides such as carbonates (chrysocolla, cuprite, chalcotrichite, pseudomalachite, minor to trace azurite and malachite) and native copper after chalcocite in the weathered lithologies. The oxides and native copper penetrate deeper into the transition zone within major shears and fault zones. Typically, gold occurs interstitially and along chalcopyrite and pyrite grain boundaries. • The Cu and Au mineralisation generally occurs within breccia's and irregular fracture infill along and adjacent to faulted lode boundaries. It can also occur as blebs or large nuggets in a dolomite, minor quartz and feldspar host.
Drill hole Information	• Exploration results are not presented in this report.
Data aggregation methods	• Exploration results and aggregates are not presented in this report.
Relationship between mineralisation widths and intercept lengths	• Exploration results are not presented in this report.
Diagrams	• Exploration results are not presented in this report.
Balanced reporting	• Exploration results are not presented in this report.
Other substantive exploration data	• Resources are primarily defined by drilling and assaying. Geophysics and surface geochemistry are used in exploration.
Further work	• Continued exploration work is planned in 2018 to continue to test for depth and strike extensions in the Kulthor North and Kulthor Far North areas.

1.3 Section 3: Estimation and Reporting of Mineral Resources

Criteria	Explanation
Database integrity	• Chinova has used an acQuire database to manage and store the company's geological database since 2009. Prior to that data was also stored in an acQuire database by previous owners Placer Pacific Limited and Barrick Gold of Australia Limited. • Assay data is imported electronically from file sent from the laboratory. Assay priorities are assigned by assay method, if different methods were used for the same interval. 'Best assay' is assigned the highest priority. Repeats are not averaged to produce the 'best' assay; this conforms with standard industry practice. • Multi-shot and gyro down hole surveys uploaded into acQuire, have priorities based on method used. Single shot downhole surveys are written onto survey forms by the driller, and entered manually into the database (system adds seven degrees to the magnetic azimuth to align the reading with the local grid). Multi-shot and gyroscopic surveys are electronically uploaded into the acQuire database (subject to passing QAQC controls). • Collar surveys are uploaded into acQuire. These have priorities and the most accurate survey method is used. • Drill hole logs are generally entered directly into acQuire data logger software at the core shed, allowing the entry forms to perform basic validation during logging. • Data templates with lookup tables and fixed formatting are used for collecting primary data. • Chinova has dedicated database management and QAQC staff who ensure all relevant data is entered and collated into the commercial integrated database package, acQuire. • Monitor QAQC data for assaying and survey information. • Survey equipment calibration is conducted regular using an onsite calibration survey station. • The Chinova database has been reviewed and audited on numerous occasions especially with the migration of data from other companies' data repositories. Where data errors were found regarding historical information, (collars, assays down hole surveys) these have been rectified.
Site visits	• The Competent Person for this Exploration data is the Exploration Manager, (Mark McGeough), a full-time employee of Chinova who has been involved the Kulthor project regularly since 2013. • The Competent Person for this Mineral Resource is the Geologist, (John David Crimeen), a part-time employee of Chinova who has been involved in the Kulthor project (including mining) since 2003.
Geological interpretation	• Interpretation is based on geological knowledge acquired through data acquisition from drilling, including detailed geological core logging, assay data and surface and underground mapping. This information increases the confidence in the interpretation of the deposit. • Mineralisation is hosted in sheared and brecciated quartz –feldspar and carbonate (mostly dolomite) lodes.

	• Previous mining of Kulthor indicated that the along strike and down dip continuity of the mineralised structure was very good and reflected the initial interpretation prior to mining. Internal grade continuity however was extremely variable likely to be less than 10m. Structural studies around the commencement of mining at Kulthor also identified sub-vertical structures causing stacking of the quartz-carbonate lode in places as well as late shallow north dipping structures causing disruption to the continuity of the ore lodes.
Dimensions	• The mineralisation zones at Kulthor comprises six Cu grade domains between 10 metres and 18 metres in width, defined over a strike length of 1,500 metres and between vertical depths of 0 to 185 metres. • Mineralisation zones exist outside the Cu domains, where grade continuity cannot be achieved between drill holes.

Estimation and model techniques	• Estimation completed using Ordinary Kriging within 3D solid domain boundaries.
	• Block estimation was completed using Datamine Studio 3 ESTIMA process. 3D mineralisation wireframes were completed within Studio 3. These wireframes are used as hard boundaries for the Interpolation.
	• A block model was constructed from the geological interpretations and LiDAR topography with multiple cell dimensions. The parent cell size for Kulthor is 20m * 20m * 20m (E, N, RL) sub-celled to 2.5m * 2.5m * 2.5m.
	• The block model in local grid (Osborne Mine Grid - OMG) extends from 8,000mE to 11,000mE, 22,000mN to 24,000mN, and vertically from 0m RL to 1300m RL. Elements in the estimation are Cu, Au, Ag, Co, S, Fe as well as SG and core recovery and RQD.
	• The drill hole data was composited to 2 m intervals by domain for use in estimating grades into the Block Model.
	• Variogram model completed on 2 m composited drill hole data.
	• Outlier samples within the drill hole sample data were restricted by applying top-cut values to the 2-metre composite file determined from summary statistics. The top-cut values calculated using decile analysis indicates the Cut off at; Cu 10.0% and Au 15.0 g/t.
	• Estimation was based on surface exploration and UG grade control drilling.
	• Grade wireframes were used to constrain the interpolation process within the block model, and allowed lens and inter-lens material to be estimated separately. The maximum wireframe extrapolation is in very close distance to the nearest drill hole, due to the nature of the ore body.
	• Three search passes within the mineralisation lens were undertaken as follows:
	  ◦ Cu pass 1: 41m * 60m * 10m (strike, down dip and cross dip orientations).
	  ◦ Cu pass 2: 82m * 120m * 20m.
	  ◦ Cu pass 3: 123m * 180m * 30m.
	  ◦ Au pass 1: 75m * 75m * 10m (strike, down dip and cross dip orientations).
	  ◦ Au pass 2: 187.5m * 187.5m * 20m.
	  ◦ Au pass 3: 300m * 300m * 30m.

	• For all, a three-pass search ellipse was used with search radii based on the variogram ranges. Dip and dip-direction were estimated into the block model, for variable anisotropy, from grade wireframe surfaces based on the geological interpretation and interpretation of the internal orientation of the mineralisation. • Ordinary kriging with dynamic anisotropy was used to estimate grades into the parent block. Grades were estimated on a parent block basis using block discretisation of 2 * 2 * 2. • The estimates were validated by: visual inspection of the model, construction of SWATH plots in easting, northing and RL, comparing drilling assays with model block estimates. • Comparison of mean grades between the drill hole data, Inverse Distance cubed estimates, Nearest Neighbour and the ordinary kriging estimates.
Moisture	• All density samples are calculated on a dry basis and dry bulk density used for the resource estimate.
Cut-off parameters	• A cut-off grade of 0.75% eCu for open pit material and 1.20% eCu is used in line with the recently operated UG and open pit at Kulthor and Osborne. The equivalent copper unit (eCu or ECU) has been modified in line with higher prevailing gold prices. The current calculation is eCu % = Cu % + (Au ppm x 0.8).

Mining factors or assumptions	• Previous Underground mining of Kulthor;
	  ○ **2011 - 2015 – 2.78Mt @ 1.66 % Cu and 1.05 g/t Au.**
	• Completion of the Kulthor UG operation was due to several reasons:
	  ○ For Kulthor to be economically exploited, it required the co-mining and processing of the Osborne remnants or other ore bodies such as Starra 276. The remnants at Osborne had effectively been extracted by the end of 2015.
	  ○ Loss of the Osborne hoisting shaft negatively impacted on the economics of both Kulthor and Osborne.
	  ○ Kulthor UG drilling identified decreasing grade and ore width at depth.
	  ○ Previous resource estimates and scoping exercises excluded areas above the UG operation due to expected recovery issues in the weathered environment. Previous exploration had not identified the extent and tenor of mineralisation along strike to the north east of the UG workings.
	• Open pit optimisation was performed by AMDAD (August 2017) on a draft 2017 Kulthor Resource Model, and was based on updated parameters of costs, geotechnical slopes, processing, metal prices, mining dilution and recovery derived from the nearby Osborne open pit operation. An updated optimisation is likely. An in-house smoothed pit with full design aspects (ramps, catch benches etc.) was also being developed.
	• The geotechnical slope parameters were also defined from those used at Osborne.

Metallurgical factors or assumptions	• Mineralogical and metallurgical testwork has been completed on the Kulthor resource, including the records of performance through the Osborne processing plant. Previous milling of Kulthor demonstrates that copper from fresh ore is successfully recovered through flotation. No deleterious / penalty elements have been identified. • Oxidised and transitional material from Kulthor has not yet been processed and testwork continues at bench top scale. Processing of the nearby Osborne open pit in the 2015-2017 shows negative impact of secondary copper minerals on recovery percentages and concentrate grades. Although the gangue minerals are different (Osborne has ironstone and silica gangue whereas Kulthor has quartz – carbonate gangue), the impact of secondary copper minerals from Kulthor ore will likely have similar recovery reductions. Potential for leach recovered copper is still being assessed.
Environmental factors or assumptions	• The Kulthor mining lease currently contains no open pits. • A potential open pit at Kulthor is relatively close to significant infrastructure including the Kulthor vent rise, the Kulthor Emergency egress, the Osborne airport, the Cannington lateral gas pipeline and the fibre optic cable. Relocation of some of this infrastructure will be required. • Chinova has existing Native Title agreements and statutory agreements in place from existing operations at Kulthor. Modification of these is likely to be required.
Bulk density	• Bulk density measurements are taken on representative diamond drill core, nominally every 10m down hole. The bulk density is determined using Archimedes principle, where the samples are weighed dry and during immersion in water to determine their bulk density relative to that of water. • The average bulk density for Kulthor is 2.87t/m^3, with minor change over oxidation profiles. • Bulk density values are estimated into the block model by Inverse Distance^2 or if insufficient data a default based on weathering zone and geological domain the sample is located in.
Classification	• Mineral Resources have been classified into Measured, Indicated and Inferred categories based on geo-statistical calculation of kriging efficiency. Then a process of reviewing drill hole intercept spacing, geological confidence, and grade continuity to determine the classification. • The geological model and mineral resources estimate reflect the competent person's view of the deposit.
Audits or reviews	• Independent verification of the mineral resources and data has been completed on numerous occasions, by various third parties since 2003, and includes database audits, observed presence of Cu in core, QAQC assay results, assaying methods, collar survey, down hole survey, assay validation, resource estimates, audits and validation. • The most recent published resource report (NI43-101 compliant) was issued by Ivanhoe Australia Limited and was compiled by independent resource consultant Richard Lewis (FAusIMM) in September 2012, who has been involved in the Osborne / Kulthor project for close to thirty years.

Discussion of relative accuracy/ confidence	• Mineral Resources are reported in accordance with the guidelines of the 2012 edition of the Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves.
	• The accuracy of the estimate is strongly dependent on:
	  ○ accuracy of the drill hole data (location and values),
	  ○ accuracy of SG and assaying methods used,
	  ○ accuracy of the interpretation of oxidation and geological domaining,
	  ○ accuracy of the interpretation of structural controls on the ore zones,
	  ○ orientation of local anisotropy and estimation parameters which are reflected in the global resource classification.
	• Underground grade control drilling, face sampling and mapping has been used to modify geological, mineralisation and structural boundaries.
	• The impact of poor recovery of secondary copper from oxidised domains remains to be fully assessed, awaiting completion of metallurgical testwork. The accuracy of oxidation surfaces requires further consolidation.
	• The Mineral Resource estimates are considered to be accurate globally, but small-scale variability at less than drill hole spacing introduces a degree of uncertainty at the stope design scale.

Competent Person Statement

John David Crimeen, Geologist, who is a Member of the Australasian Institute of Mining and Metallurgy, and a part time employee of Chinova Resources Pty Ltd has sufficient experience that is relevant to the style of mineralisation and the type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves'. John David Crimeen consents to the inclusion in the report of the matters based on his information on the form and context in which it appears.

Mark McGeough, General Manager of Exploration, who is a Fellow of the Australasian Institute of Mining and Metallurgy, and a full time employee of Chinova Resources Pty Ltd. Mr McGeough has sufficient experience that is relevant to the style of mineralisation and the type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mark McGeough consents to the inclusion in the report of the matters based on his information on the form and context in which it appears.