# High Grade Metals

# **ASX ANNOUNCEMENT**

ASX Code: HGM ACN: 062 879 583

16 July 2018

# HGM DELIVERS POSITIVE GEOPHYSICAL RESULTS TO SUPPORT INITIAL DRILLING CAMPAIGN AT FLAGSHIP COPPER-COBALT PROJECT

## **HIGHLIGHTS**

- Geophysical work program completed over former Nöckelberg mine area
- Induced Polarisation produced very strong signal results within dolomite targets of the old Nöckelberg mine
- Anomalous results are coincident with, and extend a considerable distance from, the old mine workings
- Data confirmed internally generated model with high priority targets on track to be drilled in the current Quarter
- Geophysical data acquired was induced polarisation, spontaneous potential and resistivity

High Grade Metals Ltd (ASX: HGM) ("**HGM**" or the "**Company**") is pleased to announce that a preliminary interpretation of data from the geophysical survey acquired over the former Nöckelberg Mine area, part of the 12km² flagship Leogang Copper-Cobalt Project, has been completed.

The results, which are based on multiple data types (induced polarisation, spontaneous potential and resistivity on the main profiles, plus magnetic data around the prospect area), suggest that the old mine area does have a geophysical response, and that the anomalism continues east and west of the main adit.

The geophysical campaign was also designed to test the possible extensions to the old mine area, should an anomaly be detected; in this case a broad area, consistent with geological modelling, was shown to have anomalous responses, suggesting the target dolomites extend a considerable distance from the old mine area.

# High Grade Metals Managing Director & CEO Torey Marshall said:

"The Geophysical anomaly present at the former Nöckelberg mine is an excellent result and the continuation along strike of anomalism of a similar type is an extremely positive sign ahead of drilling at the prospect.

Importantly this is consistent with our internal modelling and has produced some high priority drilling areas, thus assisting us in sequencing for the upcoming program. Any success here, augers well for other very promising areas within the broader Leogang Project area and elsewhere within our polymetallic portfolio."



## **Leogang Copper-Cobalt Project and Nöckelberg Prospect**

## Overview

The flagship Nöckelberg Prospect sits within the broader Leogang Exploration Area which is located approximately 3 km west of Leogang (population circa 3,200) and 11 km west of Saalfelden (population 16,000) in the District of Zell am See, Federal State of Salzburg. The Leogang Exploration Area (shown in Figure 1) comprises 30 Freischürfe and covers a total area of approximately 12 km², including the historical Nöckelberg and Leogang mine sites.

Nickel and cobalt were mined in the region from the mid-16th century when Leogang was famed for the diversity of its mineralogy and rich ore. At various times in its past, cobalt, nickel, copper and silver have been mined at Leogang. However, historical mining records are incomplete and unreliable; although it is clear that a mineralised body has been exploited over a considerable period of time.



Figure 1: The Leogang Exploration Area

## **Geophysical Program**

The Company has completed a geophysical program over the historic Nöckelberg Cobalt-Copper-Nickel Mine and an extension area to the north east.

The program involved the acquisition of six profiles of a combined geo-electrical (DC), induced polarisation (IP), and electric spontaneous potential (SP) survey data (See Figure 2). In addition, a ground magnetic survey was acquired to supplement the other geophysical data (See Figure 3).

The program was intended to test the geophysical response of the mineralised section assumed to be recovered from the historic Nöckelberg mine. Specifically, the geology has high contrast rock types being the target dolomite layers and the adjacent graphitic shales. Theoretically a difference in both magnetisation of contained minerals, and conductivity of them creates a significant difference in geophysical response across the combined techniques used.

The survey included lines acquired over the known adits, as transposed in three dimensions as a calibration, and extended east and west of that main objective to provide insight on its possible extents.



As a result, known (assumed), mineralisation still present subsurface appears as a strong signal on the main calibration profile, and, by extension, the derived anomaly pattern was found to replicate on other profiles acquired (Figure 4 – 3d model and Figure 7 Profile 3).

Where the combined DC information was not acquired, magnetic contrast in the units, relative to the known areas of calibration, suggest that the target units extend further to the east and west than previously presented.

Based on the results, the complex anomalies of potentially mineralised dolomites in the Nöckelberg prospect comprise:

- 1) SP low to very low readings;
- 2) DC slightly higher resistivity than the graphic shales;
- 3) IP very strong signal
- 4) Magnetics elevated versus the surrounding rock

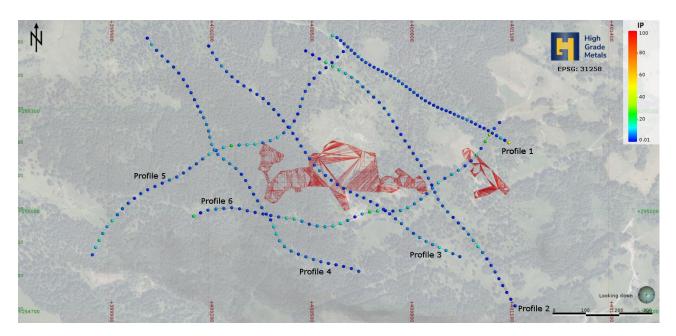


Figure 2 - Location map of DC, IP and SP survey profiles



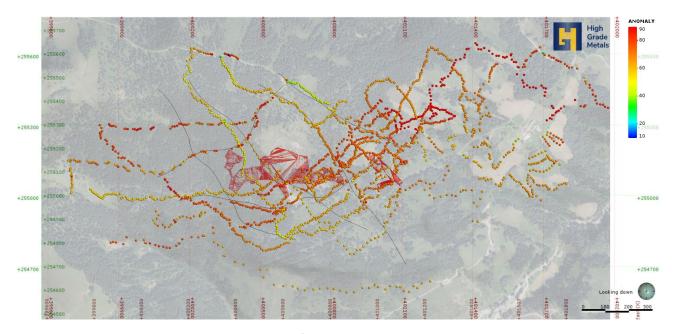


Figure 3 – Location map of ground magnetic survey points

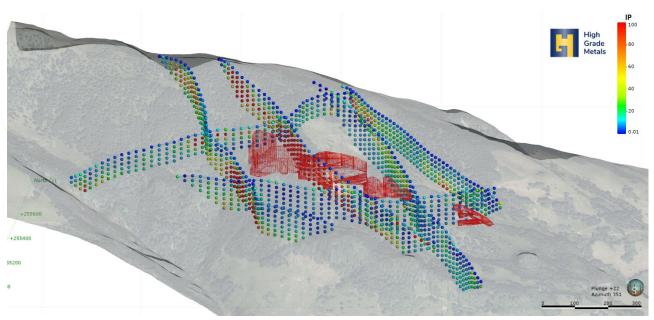


Figure 4 – 3D Drape of IP survey over Nöckelberg

All IP profiles acquired are inserted below for reference



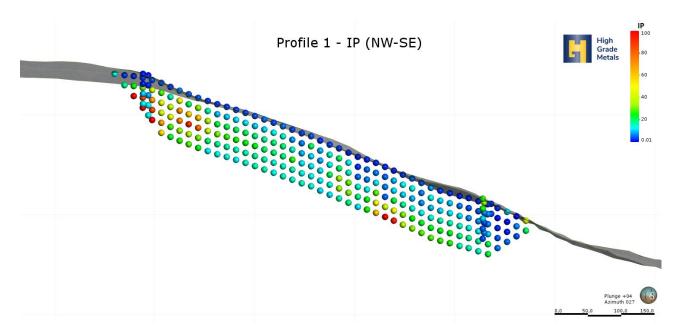


Figure 5 – IP Profile 1

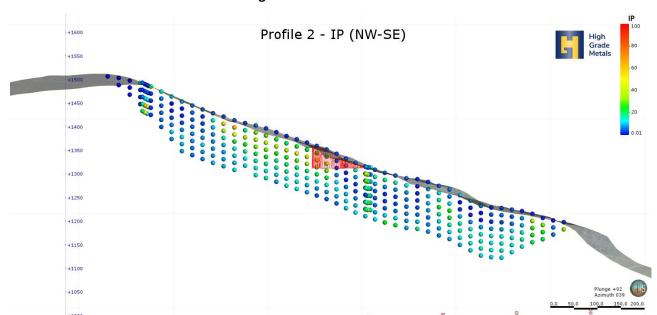
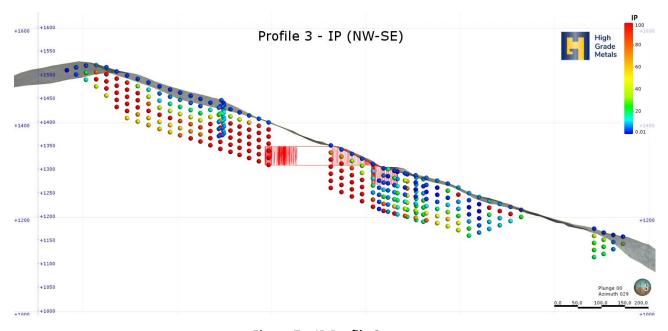


Figure 6 – IP Profile 2





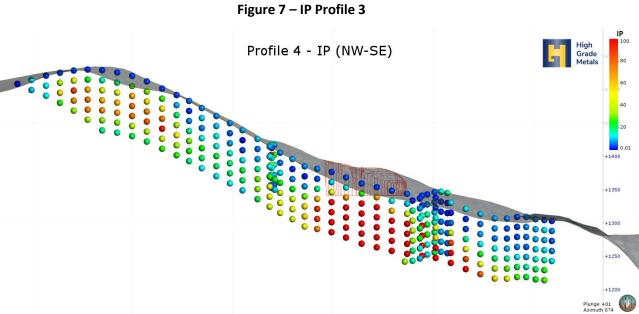


Figure 8 – IP Profile 4



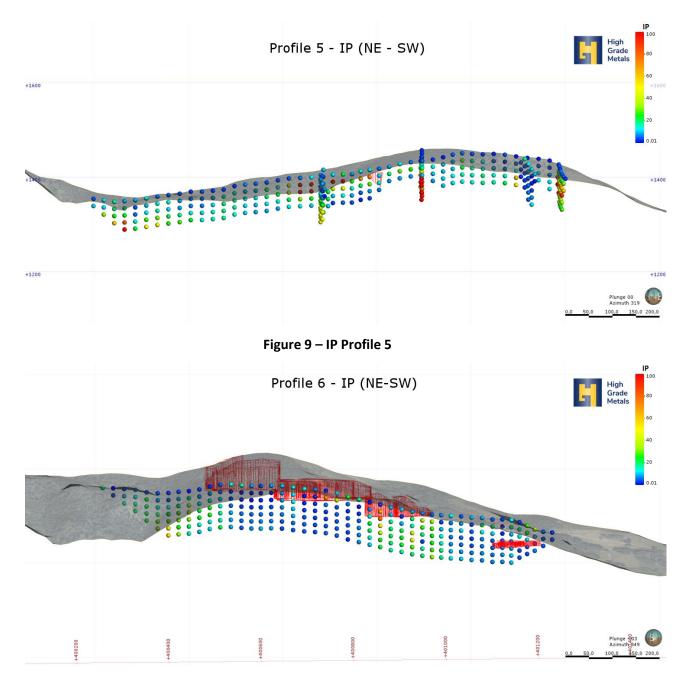


Figure 10 - IP Profile 6

\*\*\* END \*\*\*

# For further information contact:

# **Torey Marshall**

CEO and Managing Director info@highgrademetails.com.au

# **Hayden Locke**

Non-Executive Director info@highgrademetails.com.au



# **Competent Persons Statement**

The information in this report that relates to the Exploration Results is based on, and fairly represents, information and supporting documentation compiled under the supervision of Mr Torey Marshall, the Managing Director and CEO of HGM. Mr Marshall is a Competent Person who is a member of the Australian Institute of Mining & Metallurgy. Mr Marshall has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a competent person as defined in the 2012 edition of the JORC Code. Mr Marshall consents to the inclusion of the matters based in this ASX Release on his information noted in the form and context in which it appears.

# About High Grade Metals Ltd

High Grade Metals (ASX: HGM) is an Australian mineral exploration company with a portfolio of brown fields cobalt, copper and gold assets. The Company's major projects are all located in mining friendly Austria, which covers an area of about 84,000 km<sup>2</sup> across Central Europe. The highly experienced management aims to grow the value of HGM's project portfolio to benefit shareholders by leveraging innovation and maximizing value of the assets through systematic exploration and teamwork. The dynamic two-year exploration and development program underpins the Company's business strategy.



Figure 11. Location of High Grade Metals' Projects within Austria



# The JORC Code, 2012 Edition – Table 1

# **Section 1 Sampling Techniques and Data**

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul> <li>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate colibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	HISTORICAL  No historic procedures or flow sheets were sighted that explain the histor drilling and sampling processes completed at any of the mines within the portfolio described. Historical data referenced is contained in old reports, largely publicly accessification within the Austrian data system provided by the relevant governme department or over the internet. The Company has assumed that all reported occurrences/assays a representative of technology available at the time but no reliance has been pon it, nor is any of it regarded as 'industry standard' under any modern code No reference to sampling/analytical method, applicability or procedures we documented in any documentation referenced to the satisfaction of the Company.  Channel sampling (133 samples) in the Schellgaden area comprised: making two parallel incisions with an hand-held electric diamond rock saw, about 3 apart and about 2cm deep from top of the face to the bottom (depending the age of the stope between 1.50 and 1.80, in rare cases over 2m, and whe it exceeded 2.5 to 3m sampling was split into an upper and lower portion.) The next step was to chisel the sample — wall rock and ore off the face collecting in a sample bag. The cuts were always vertical to bedding and the stratific ore layers. Samples and sample location were marked accordingly. Or sampling was completed the channel was measured and lithologies mappe total length of channel, length of hanging wall, of the ore and of the foot were deviced as the stratification or factor of ore dilution used to get the actual grade of each sampled ore body was during this mapping process that the frequent difference in wall reliable grounding the main mine historic Schellgaden mine.  After Agosyleff the project, a single 295m hole was drilled in 1997 through the main mine historic Schellgaden mine area, and another shallow diamond the adjacent to an access road in 2008/9 for the purposes of permit renewals.  MODERN PROGRAM  The modern program includes all industry standard processes applicable

All cleaned geophysical data (approx. 92%) served a complex interpretation



Criteria	JORC Code explanation	Commentary
		scheme (negative SP, lower resistivity, high IP, elevated mag) and combined with geological modelling into an unambiguous. The resulting geological model clearly differentiated between the four main members of the prospect (talus, shale, non-mineralized host rock, ore-bearing strata / podiforms).
Drilling techniques	Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	<ul> <li>Drilling was not referenced in any results mentioned in this release as the Company was not satisfied with the information available. There are reported diamond core holes (size to be verified), at the Schellgaden and Goldeck-Siflitz properties.</li> <li>In the period 1995 to 1997, Argosy Minerals planned and executed the drilling of 4 diamond holes on the Schellgaden North property, adjacent to the historic mine.</li> <li>No drilling results have been sighted for the Leogang Exploration Area</li> <li>MODERN</li> <li>New drilling in the Schellgaden and Leogang Areas will comprise diamond drilling predominantly, likely of a HQ size, to obtain representative samples of target stratigraphy for testing and to increase the geological understanding of the area</li> <li>The company will put in place a current JORC compliant process for this drilling to enable it to competently report on future results.</li> <li>For the purposes of calculating an exploration target, historical drilling has been used to assist in the validation of a geological model developed for Schellgaden.</li> </ul>
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>	<ul> <li>No drilling results were reported in this release, and no historic drilling from the key 1995 programs is available for further analysis (including a formal assessment on recovery.</li> <li>No drilling results have been sighted for the Leogang Exploration Area</li> <li>MODERN PROGRAM</li> <li>The Company is seeking to verify some aspects of historical drilling undertaken at Goldeck-Siflitz and Schellgaden. For the purposes of generating the exploration target, historical logging information on cores available has been checked as have random channel sample locations within the old mine area at Schellgaden.</li> </ul>
Logging	<ul> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul> <li>No satisfactory records of logging and sampling have been satisfactorily verified by the Company at this time.</li> <li>No Resource estimate, mining or metallurgical study is discussed in this release.</li> <li>No drilling results have been sighted for the Leogang Exploration Area.</li> <li>MODERN PROGRAM</li> <li>The Company has only partly verified logging completed at Schellgaden and Goldec-Siflitz. During 2018 the old drill holes will be relogged after drilling is completed at the Schellgaden prospect.</li> <li>Whole rock geochemical samples were described in terms of lithology prior to being sent for destructive analysis, and photographed.</li> <li>No new geochemical information is presented in this release, and the complete geochemical database is presented in the Prospectus lodged in January of 2018, or reported in market releases between then and todays date.</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	No drill core was reported in this release  For Schellgaden, all samples were sent initially to the Laboratory of Geosciences at the University of Salzburg then cores were cut in half parallel to axis, followed by a detailed continuous description of geological features by the project manager/chief geologist, and sample intervals were determined based on lithologies and mineralization; each sample (core & channel) crushed by a jaw crusher, reducing size to <2mm, followed by putting the crushed homogenized sample through a sample splitter, and repeating the process until 100-150g sample was obtained, which was then ground for about one hour in an agate mill, then sent to Bondar-Clegg, N Vancouver, B.C. for geochem "gold plus "34" analysis. Only duplicates 'taken randomly' are reported in historic documentation  No QA/QC measures were satisfactorily identified by the Company at this time  The bulk of reported samples, based on historical references, is classed as a



Criteria	JORC Code explanation	Commentary
Quality of assay data and	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique	<ul> <li>rock chip sample</li> <li>No satisfactory documentation with respect to sample sizes, methodology or use of blanks/duplicates has been sighted</li> <li>No drilling results have been sighted for the Leogang Exploration Area</li> <li>MODERN</li> <li>The Company has partly verified the sub-sampling techniques and sample preparation that may have been adopted at the Schellgaden and Goldeck-Siflitz projects. This has been focussed on the channel sampling undertaken in the 1990's.</li> <li>No physical sampling or results are reported in this release</li> <li>With respect to Schellgaden, the type of assay performed by a recognised laboratory in Canada is deemed appropriate, though the procedures in terms</li> </ul>
laboratory tests	<ul> <li>is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</li> </ul>	of blanks, duplicates and standards, do not meet current industry practice. It is recognised as an appropriate test that was routinely completed by company's at the time.  No new geophysical or geochemical instruments are reported in this release No QA/QC procedures were adequately documented in historical drilling across the Company portfolio No drilling results have been sighted for the Leogang Exploration Area  MODERN PROGRAM
		<ul> <li>The Company is in the process of verifying the quality of assay data and laboratory tests used on certain programs at Schellgaden and Goldeck-Siflitz. This has been focussed to date on the channel sampling program and not the drilling analytical program. For the purposes of the Exploration Target, the procedures used in the 1995 channel sampling program were found to be acceptable for the computation of ranges. These were cross checked with spot samples to assess whether the range of grades were acceptable based on the channel samples (max and min).</li> <li>The results of soil and whole rock analysis used current quality control procedures including standards, blanks and duplicates which established an appropriate level of accuracy and precision.</li> <li>The Geophysical program used a combined geo-electrical (DC), induced polarisation (IP), and electric spontaneous potential survey, and a Geometrics G-857 proton magnetometer for the magnetic susceptibility measurements. Instrumentation for the combined survey consisted of a Hungarian made ELGI Diapir 18 receiver and connected ELGI Diapir-T transmitter. During the program the instrumentation was corrected for false grounding, creeping current effects, electric noise, stray currents.</li> <li>SP values plotted straightforward, no highcut filter employed. SP modelling focussed on deep targets, hence only low-frequency portion used for forward modelling.</li> <li>The magnetic data underwent standard processing, e.g. diurnal variation correction (to the more closely positioned Munich observatory), spike-filtering, trend removal, pole reduction. By calculating, the analytical signal of the magnetic anomalies a positional QC with other geophysical results facilitates,</li> <li>Resistivity and IP raw data transformed from pseudo depth sections into inverted model data using the Interpex Resix/IP software suite. Resistivity data were inverted using additionally the Res2dinv IP package from Loke.</li> <li>Multiple measurements were</li></ul>
	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul> <li>Paper records were translated to English (where they first were German), and otherwise reports were available written in English</li> <li>No documentation of primary data, data entry procedures, data verification or storage information has been sighted</li> <li>No adjustments were made to any of the historical data presented though the Argosy channel sampling (Schellgaden and Goldeck) was described above. Typically, a length of channel was measured and logged lithologically to allow identification of known barren wallrock. The sample was essentially then crushed and split as per specification and processed as a single sample. After receiving this 'diluted' result, it was corrected by adjusting the grade over a prospective interval that had the barren portion removed (based on the lithological logging). This is particularly salient for Schellgaden where, for example only, a sample length of 2m, which might have 50cm above and below a zone of barren wall rock, may assay at 10g/t over 2m, would be corrected to be 20g/t over 1m by decreasing the overall length (removing wallrock in the calculation).</li> <li>No drilling results have been sighted for the Leogang Exploration Area</li> </ul>



Criteria	JORC Code explanation	Commentary
		MODERN PROGRAM
		<ul> <li>The Company will verify, via repeat sampling, key channel and rockchip samples reported historically at Schellgaden and Leogang, and augment with acquisition of new data (drilling).</li> <li>The Company has not verified any past mining results reported at Leogang, and will undertake a future program to do so.</li> <li>The Company will undertake drilling at Schellgaden to verify any past results and current interpretations.</li> <li>Field data captured during the Geophysical program at Nockelberg was delivered to Dr Rainier Arndt (HGM's independent mining geophysical consultant) for review, validation, necessary field adjustments, digital storage and processing.</li> </ul>
Location of data points	Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. Specification of the grid system used. Quality and adequacy of topographic control.	No drillhole locations were reported as none were surveyed, only rockchip samples from localities were reported.     Whilst no detailed map is presented in this release, the projection system is typically a Gauss Kruger for tenement maps     No topographic map was presented in this release     No drilling results have been sighted for the Leogang Exploration Area     MODERN PROGRAM  The Company will undertake a survey to properly locate any historic drilling or
		<ul> <li>mining that may have been completed in any of the project areas.</li> <li>Topographic data available from the Austrian State was used (5m accuracy) to superimpose historic mine maps over and determine relative mining levels. The accuracy of the old maps and sections is indeterminable and it was fitted to the topographic map via observation of access shafts and adits. The fit between newly acquired data and historic data was quite strong.</li> <li>For QC purposes regarding distortion correction an external mine surveyors report was made by DI Friedl and the fit of data points was confirmed.</li> <li>Drill hole (proposed) locations are based on the same data used in preparation and reporting of recent results and are based on the EPSG 31258 (Austrian BMN M31, Greenwich), used in all reported recent results.</li> <li>EPSG 31258 is the grid system is used for presentation of geophysical data and profile locations and represents a requirement by local authorities for permitting purposes.</li> <li>EPSG 31252 (Gauss Krüger M 31 Austria Central, Ferro) is used an alternative system depending on data source and/or recipient.</li> <li>The used EPSG Code is referenced on standalone maps and in reports.</li> <li>An official coordinate conversion table is available.</li> <li>Geophysical data was acquired on a standard WGS 84 datum, and the expected GPS accuracy is likely better than +/-5m for easting and northing.</li> </ul>
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>Whether sample compositing has been applied.</li> </ul>	HISTORIC     The historic rock chip sampling appears to have been completed on an irregular spacing within selected localities, almost certainly within old workings     No satisfactory evidence of sample compositing being applied for any project at this time     No Mineral Resource or Ore Reserve is reported in this release     As a result of wide spacing and reliance on historical information that has yet to be replicated, it is considered only appropriate expressed as a broad exploration result with considerable additional work required
		<ul> <li>MODERN PROGRAM</li> <li>The Company is assessing the appropriate data spacing and distribution at the Schellgaden and Goldeck-Siflitz projects in terms of channel sampling and drillholes completed. The drillhole program is sparse, and channel sampling requires subsurface mine surveys to properly locate</li> <li>The data spacing in geological interpretation was strong as it was based on historic field mapping and interpretation of airborne imagery. Cross sections generated by previous researchers on circa 250m spacing were also spliced into the interpretation and used as control on the interpretation. Interpolation in the construction of the bodies was created by the software package Leapfrog. The Company applied a hard cut off to the end of the interpreted body based on a lack of confidence deeper than circa 300m sub surface.</li> <li>Data spacing in the recent reconnaissance geochemical program at Leogang was focussed and appropriate for testing hypotheses relating to potential mineralisation of the lower modelled layer, and in spot sampling waste dumps to determine possible characteristics of historically extracted material.</li> </ul>



Criteria	JORC Code explanation	Commentary
Orientation of data in relation	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this	<ul> <li>No new geochemical information from Schellgaden is presented in this release and the data used is derived from historical sources. The calculation of diluted versus undiluted grade is discussed elsewhere in this table.</li> <li>Geological modelling creates an interpreted spacing between future drill holes and between key geological units. This is not composited but remains entirely interpretive and subject to significant revision post drilling.</li> <li>The spacing, as referred to elsewhere in this table, for the Nockelberg geophysical survey was appropriate for exploration purposes. Its intention was to establish whether a link existed between old mineralised workings and proposed drill hole locations which would support significant expenditure on drilling to test out the significance of the mineralisation potentially at depth.</li> </ul>
to geological structure	<ul> <li>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul> <li>No documentation on the sampling of possible structures and any bias was sighted in any documentation for the Cobalt-Nickel-Copper properties, in particular Leogang &amp; Nockelberg. The sampling is assumed to be biased to the lithologic host of mineralisation being a dolomitic unit. The controls on that unit are not discussed in detail in specific reference to historically sampled units</li> <li>In terms of Schellgaden historic workings and the Argosy exploration program (which includes work at Goldeck), the data was gathered across old 'mine faces', and drilling was completed roughly perpendicular to known mineralisation to accurately test the thickness of any mineralisation encountered. Post drilling analysis in particular did identify additional structural controls to these areas which should be followed up in new programs.</li> <li>In terms of the Argosy program across Schellgaden and Goldeck in particular, there appears to be no bias introduced in drilling.</li> <li>No drilling results have been sighted for the Leogang Exploration Area</li> </ul>
		<ul> <li>Adapting and testing the geological models resulting from historical exploration will be critical in ensuring that any potential mineralisation is tested properly at the material projects of Leogang and Schellgaden</li> <li>This modelling has been created to better understand the orientation of geological structures as part of program planning.</li> <li>The location of drillholes and anticipated trajectory is based on the geological and geophysical modelling completed to date. Only drilling these holes will enable a further discussion on orientation of data in relation to geological structure</li> <li>4 strike lines and 2 dip lines were acquired to cover, as best as possible the geology on a near perpendicular basis and then to tie those results together. This provided more information on the orientation of potential mineralisation, and potential controls. It was expected, and interpreted, to be a fair representation of the geological structure.</li> </ul>
Sample security	The measures taken to ensure sample security.	HISTORICAL
		<ul> <li>Sample security measures during transport and sample preparation are unknown.</li> <li>MODERN PROGRAM</li> <li>Industry standard best practice will be applied for physical data capture</li> <li>This was not applicable for desktop geological modelling, geochemical data assessment and Exploration Target generation</li> </ul>
		<ul> <li>All primary data acquired during the geophysical surveys at Nockelberg were recorded by an independent contractor and vetted (QA/QC), then stored by HGM's independent consultant.</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	No details sighted on any previous sampling reviews or audits and none were undertaken
		<ul> <li>MODERN PROGRAM</li> <li>No audit has been undertaken, standards and procedures are reviewed on a tri-weekly basis and their application to the program checked by company representatives to ensure contractors adhere to minimum standards.</li> <li>Geological modelling was checked by multiple professional geoscientists for internal consistency and defensible peer review. Interpretation is subjective in all cases.</li> <li>Geochemical modelling was audited by multiple professional geoscientists for internal consistency against the results of the blanks, standards and duplicates inserted in the program as part of JORC standard QA/QC processes (no spurious or unacceptable results were detected).</li> </ul>



Criteria	JORC Code explanation	Commentary
		<ul> <li>No new geochemical results were used in the determination of average grades at Schellgaden. However, limited 'check' samples were taken from some parts of the mine to verify grade ranges were possible, were used in determining what was 'reasonable' in modelled grades.</li> <li>Geophysical data was examined for QA/QC compliance by HGMs independent consultant on a daily basis.</li> </ul>



# **Section 2 Reporting of Exploration Results**

(Criteria listed in the preceding section also apply to this section.)

Criteria		Commentary
Mineral tenement and land tenure status	Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.  The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	<ul> <li>The full list of tenements purchased with an undiluted 100% working interest are included in the body of the announcement dated 13 November 2017 or prospectus dated 30 January 2018</li> <li>The Gold Projects have a 2.5% Net Smelter Royalty, payable up to a cumulative total of U\$\$2,500,000 is reached. After that, there are no royalties</li> <li>There are no known impediments to obtaining a licence to operate a suitable exploration program in the area outside of standard landholder and regulator consents required under the relevant mining code</li> </ul>
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	<ul> <li>The disparate nature of books and records, coupled with the very long history of some projects precludes identification of all phases of exploration completed to date</li> <li>No substantive modern exploration (that is, exploration undertaken over the last 50 years), has been identified as having taken place over the Cobalt-Nickel-Copper exploration areas though recognition is given to current academics studying the area and past reports which have been referenced in this release from "Die Kupfer-nickel-Kobalt-verezung im Bereich Leogang (Inschlagalm, Schwarzleo, Nockelberg" by JG Haditsch and H Mostler 1970</li> <li>Argosy Minerals completed exploration programs between 1995 and 1997 over the Schellgaden and Goldeck-Siftliz area. This was limited in scope (very good confirmatory channel sampling and geological mapping/modelling ahead of a small drilling program), though executed well. They completed an extensive underground mine/working face sampling program (channel samples), to test the actual presence of gold mineralisation and historically reported grades. Where those samples were deemed representative, small drilling programs were undertaken at Schellgaden and Goldeck. The results showed relatively flat lying mineralised bodies in the Schellgaden area and they considered 4 to be present</li> <li>Eurocan Mining Gmbh have undertaken geological studies augmented by two drillholes in the 22 years post Argosy that they controlled the Schellgaden area. The STB-1 vertical diamond hole (295m), proved that the Argosy drilling was not completed in the right location, and that the number of mineralised units present was higher, plus there were additional 'blind addits' or former mine stopes below those recognised in historical records. The studies also suggested strongly that there may be missed mineable ore in the mine, which should be properly explored by a systematic drilling program. Ultimately, the geological interpretation of mineralised bodies post drilling the STB-1 core hole, sugges</li></ul>



Criteria Commentary

Geology

- Deposit type, geological setting and style of mineralisation.
- The project areas comprise a diverse set of deposit styles, principally located around the periphery of the Tauern window. The mid-Alpine sequences have been exposed to volcanic, hydrothermal, epithermal, epigenetic, structural and metamorphic/metasomatic events which has produced a polymetallic halo effect that is quite variable. In general Austria can be subdivided into major tectono-stratigraphic groupings, and particularly those that relate to the Tauern window, around which, the majority of mineralised bodies have been located to date (commodity agnostic). The northern part of the country is dominated by the Bohemian Massif, to the south the Molasse, Helvetic and Penninic zones. Material projects disclosed in this release are located in the northern calcareous zone (Leogang), and the southern Penninic zone (Schellgaden). Overall, the Tauern window is classed as a nappe structure, with significant N-S thrusting creating a series of sheets. Its these exposed sheets that carry mineralisation in certain areas around the window.
- The style of mineralisation at Leogang/Nockelberg relates to the host lithology, dolomites, and their proximity to hydrothermal fluids. Commonly these fluids will concentrate around zones of structural deformation and the main mineralised zone at Leogang is widely reported as proximal/part of a thrusted package, which is demonstrably occurring over a wide area of central Europe (regional structural history). Where previous research indicated structural controls on the mineralised unit, there is little regional exploration information to assess whether the geological setting of mineralisation can be broadened from the Leogang type section/deposit of upper Silurian to Middle Devonian age.
- The style of mineralisation at Schellgaden relates specifically to the genesis of the Penninian epi-metamorphic formations which are a volocanic, volcaniclastic and sedimentary origin which were deposited during the early Palaeozoic in a series of E-W basins. Due to volcanism active during the deposition, which effectively has produced rhythmic exhalites, a complex series of syngenetic stratabound ore deposits have been formed. Mineralisation is complex and regional overlapping of metallogenic processes often created a unique blend of ore types. For instance tungsten and antimony ores often have quite high gold grades and are ascribed to the earliest stage of metallogenic evolution. In terms of Schellgaden, it belongs to this exact system and timing of evolution. It is a stratabound series of mineralised units that tend to show much higher gold grades than other constituent commercial minerals (though does have Copper and Silver in some areas). This stratabound layering of mineralisation is horizontal to subhorizontal over large areas and currently the geological model suggests all the old mines and workings occur in this layer (locally the Kareck series within the Habach Formation). These flat lying beds are faulted and offset in the historic mine workings, though mineralisation is not controlled by faulting, only its current representation of prospective zones to be drilled.

Drill hole Information

- A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:
  - easting and northing of the drill hole collar
     elevation or RI (Reduced Level elevation)
  - elevation or RL (Reduced Level elevation above sea level in metres) of the drill hole collar
  - o dip and azimuth of the hole
  - $\circ \qquad \textit{down hole length and interception depth}$
  - o hole length.
- If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.

# HISTORIC

- No completed drilling has been reported in this release
- The Company is undergoing a process of resurveying and evaluation of limited drilling completed at Schellgaden and Goldeck-Siflitz. No drilling results or locations are known at the Leogang/Nockelberg area.
- The drilling information has been excluded due to the need to verify most aspects required under the JORC 2012 code with independent studies, and that it does not alter the presentation of data insofar as the properties concerned are 'exploration' and all require substantially more drilling than has been excluded. No representation on a Mineral resource can be inferred and the past completed programs were quite minor versus testing a broad suite of concepts that would otherwise demonstrate anything other than an area having 'potential'. As a result the exclusion is justified as not material, and its absence does not detract from the understanding presented.
- No drilling results have been sighted for the Leogang Exploration Area

### MODERN

• The Exploration Target Assessment is based on the modelled location of potentially mineralised layers, and planned drill hole locations. The proposed locations, shown on maps are subject to confirmation from regulatory bodies and landholder access agreements. As such, they are regarded as preliminary and subject to change, so no further tabulated location information has been presented. In the event that a hole is drilled, then future Exploration Results would require disclosure of the appropriate location/orientation information. As such, this does not detract from the understanding of the Exploration Target statement as it is based on a proposed exploration program



# Criteria

Data aggregation methods

## **Commentary**

#### HISTORICAL

- In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated
- Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.
- The assumptions used for any reporting of metal equivalent values should be clearly stated.
- No aggregation methods are reported, or have been sighted for the Cobalt-Nickel-Copper properties, in particular the Leogang area or for the Gold properties, in particular the Schellgaden area.
- No metal equivalence figures have been reported for any project in this release
  - The Argosy channel sampling (Schellgaden and Goldeck) was described above. Typically a length of channel was measured and logged lithologically to allow identification of known barren wallrock. The sample was essentially then crushed and split as per specification and processed as a single sample. After receiving this 'diluted' result, it was corrected by adjusting the grade over a prospective interval that had the barren portion removed (based on the lithological logging). This is particularly salient for Schellgaden where, for example only, a sample length of 2m, which might have 50cm above and below a zone of barren wall rock, may assay at 10g/t over 2m, would be corrected to be 20g/t over 1m by decreasing the overall length (removing wallrock in the calculation). The results reported historically, and presented in this release are 'undiluted' (i.e. with wallrock calculation made), for the channel samples taken at Schellgaden and Goldeck.
- No drilling results have been sighted for the Leogang Exploration Area

#### MODERN

- No metal equivalent values are reported in this release.
- The determination of Exploration Target grade is expressed in terms of the previously reported reconnaissance geochemical results. The range in grade referred to in this release is entirely related to that, and no historical information has been used. As a result, no aggregation methods or arbitrary cut offs were used, only the range of values quantitatively assessed. It is possible that this 'raw' presentation of data does introduce bias in terms of understating potential grades that may be present in the subsurface. Assuming the exploration program is executed, geostatistical analysis will be employed to determine appropriate future ranges to discuss in the context of an Exploration Target for the Nockelberg Prospect.
- Calculated potential grades at Schellgaden were significantly reduced from the computed averages to create a high hurdle rate for internal assessment. It was determined that a low, medium, and high grade case would be used based on the range in values available. Critical to the discussion is the understanding that the sampled channels represent the thinnest intervals and were not minable at the time. Therefore, unmined intervals, as evidenced by void space within the mines, were significantly thicker, and potentially of higher grade. The Company took the view that assuming the minimum thickness was unreasonable (with a multi layer average of around 0.45m), and a maximum thickness was unreasonable (multi layer maximum of 2-3m), so a thickness, or faux intercept, of 1m was used as a default for all layers. In terms of grade, the range in results from channel sampling was deemed to be extreme so a minimum cutoff grade of 5g/t, medium of 10g/t and high of 15 g/t was selected based on the likelihood of economic depth being reached (this also discounts gross outliers in terms of grade in both directions). In this way, the Company used a consistent layer thickness (or intercept) and flat values of gold to calculate the appropriate range in exploration target.

#### Relationship between mineralisation widths and intercept lengths

- These relationships are particularly important in the reporting of Exploration Results.
- If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should
- If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').

## HISTORICAL

- No drilling reported, no mineralisation widths and intercepts from drillholes any project referred to in this release.
- The widths/thickness of any mineralised layer reportedly present or mined in the Leogang-Nockelberg area is only sparsely known.
- In the Argosy channel sampling broadly undertaken across a large number of sites (but where specifically applicable to the Schellgaden and Goldeck projects); the samples were taken from the top of a mineralised face in an old addit/working/stope, to its base. This corresponds to a perpendicular channel sample which is representative of the overall thickness of a mineralised body being sampled. The thickness of channel samples taken varied from tens of centimetres (quite thin), to 3 metres (quick thick). Significant variation in the thickness of zones was observed during due diligence and as such the true thickness of any layer, at any given point, cannot be reliably estimated at this time.
- No drilling results have been sighted for the Leogang Exploration Area

### MODERN PROGRAM

- The modern resampling and resurveying of the mine areas in all projects will allow a better understanding of the true geometry of the potentially mineralised bodies present, therefore improve drill planning such that it can optimally intersect a target
  - The geological modelling is designed to orient the geological structures in preparation for drilling planning to ensure intercepts are, within the boundaries



Criteria Commentary

of interpretation, likely to be as orthogonal to target units as possible

- The Exploration Target assessment is based on the geological modelling completed which is a 'best guess' mathematical interpolation of data collected at surface. The dearth of drill hole data and nature of an Exploration Target statement means that there is no certainty on the relationship of any mineralisation to drill hole angle, thicknesses, or clearly, grade. This statement is based on a future program, to be undertaken and completed in the Austrian summer of 2018, and is not based on any quantitative data recovered as a result
- Calculated potential grades at Schellgaden were significantly reduced from the computed averages to create a high hurdle rate for internal assessment. It was determined that a low, medium, and high grade case would be used based on the range in values available. Critical to the discussion is the understanding that the sampled channels represent the thinnest intervals and were not minable at the time. Therefore, unmined intervals, as evidenced by void space within the mines, were significantly thicker, and potentially of higher grade. The Company took the view that assuming the minimum thickness was unreasonable (with a multi layer average of around 0.45m), and a maximum thickness was unreasonable (multi layer maximum of 2-3m), so a thickness, or faux intercept, of 1m was used as a default for all layers. In terms of grade, the range in results from channel sampling was deemed to be extreme so a minimum cutoff grade of 5g/t, medium of 10g/t and high of 15 g/t was selected based on the likelihood of economic depth being reached (this also discounts gross outliers in terms of grade in both directions). IN this way, the Company used a consistent layer thickness (or intercept) and flat values of gold to calculate the appropriate range in exploration target.

Diagrams

- Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional
- Refer to Figure 1 for tenure location
- No drilling is reported in this release, and no resource or discovery is reported in
- The proposed exploration program, which is the basis for the Exploration Target, does allow the creation of appropriate maps and sections that clearly show the proposed location of drillholes, and projected path of drillholes with respect to the target layers.
- The geophysical maps and sections presented are appropriate to represent their location relative to proposed drillholes, and the potential relationship to a subsurface anomaly.

Balanced reporting

- Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.
- Representative reporting of the range of results found in literature currently available to the Company has been presented in the release. This includes the highest and lowest grades available from rockchip samples across 8 main project areas and 50+ old mines and workings. The spot nature of rockchip samples, lack of documentation, lack of drillholes, variable thickness of key zones as observed. and lack of modern exploration generally is appropriately reported. These areas can, at best, be described as being broadly 'prospective', but none have had modern techniques and rigor applied.
- No drilling results have been reported
- Results for sampling reported historically at what the Company believes to be a material property, and focus of exploration at Leogang/Nockelberg is shown below. (reported in a UTM WGS84 location)
- A summary of results from channel sampling completed by Argosy at what the Company believes to be a material property and focus of exploration at Schellgaden is shown in Appendix 3

Locality	Easting	Northing	Sample	Co (%)	Ni (%)	Cu (%)	Reference
	324875	24875 5255750	1	3.9	1.55	2.19	Haditsch & Mostler 1970
			2	3.6		4.38	Haditsch & Mostler 1970
Nockelburg			3	19.5	2.35	3.59	Haditsch & Mostler 1970
			4	2.75	2.36	3.19	Haditsch & Mostler 1970
			5	4.65	3.14	12.7	Haditsch & Mostler 1970
Leogang/Schwarzleo	nwarzleo 324800	5254950	6	11.67	6.52	3.82	Haditsch & Mostler 1970
Leogang/Schwarzieo		5254950	7	15.76	8.12	4.91	Haditsch & Mostler 1970

- No inferences are made from the geological modelling outside of the observation that the mine appears to have had a limited extent versus the target horizon which appears to have hosted mineralisation and its possible separation into two bodies that will need to be further tested via geophysics and geochemistry ahead
- The entirety of reconnaissance geochemical data, which was used to establish ranges of appropriate potential grade at Leogang, was presented in an ASX release dated 27-3-2018. The presentation of a range in grades has been determined on the basis of this information only. No historical results have been included. The reader should be aware this may result in understating a potential grade as the basis of the whole rock sampling is 'discarded' material as opposed to 'in situ' material.
- The entirety of reconnaissance geochemical data, which was used to establish ranges of appropriate potential grade at Schellgaden, was presented in the relisting prospectus lodged in January of 2018. The presentation of a range in grades has been determined on the basis of this information only. The reader should be aware this may result in either overstating, or understating, quite significantly the grade or thickness of any layer encountered. Limitations on the accessibility of the mine, and the extreme length between data points (circa



Criteria Commentary

1500m between the main mines and the Katschberg tunnel), mean that averaging any grade, thickness, or continuity is erroneous and highly speculative.

- The range in potential volumes of rock, for the high and low side tonnage estimates of the Exploration Target at Leogang were based on the geological modelling. The minimum exploration target is defined by reducing the tonnage estimate generated from the geological modelling by 20%. The maximum exploration target is defined by increasing the tonnage estimate generated from the geological modelling by 20%. The drilling program is designed to test the Top Layer and the Bottom Layer by pattern drilling on approximate 150m spacing. Assuming the drillholes do penetrate both layers based on the modelling, they represent a fair 'minimum' and 'maximum' tonnage target.
- The range in potential volumes of rock, for the high and low side tonnage estimates of the Exploration Target at Schellgaden were based on the geological modelling. No range in volumes was calculated simply because arbitrary cutoffs were already applied which introduced significant high and low side uncertainty. The drilling program is designed to test up to 5 layers of potential mineralisation depending on the hole by hole location.
- The Exploration Target is based on a very limited amount of qualitative (historical) data and relies heavily on interpretations derived from that data. Effectively, no 'modern' exploration data is available for the Nockelberg Prospect, meaning that the Exploration Target for the Prospect is based entirely on reconnaissance work completed by the Company, and a future program, subject to significant uncertainty and may not result in any significant mineralisation being reported in 2018 after drilling.
  - Geophysical anomalies are not proof of any economic commodity deposit. The data is influenced by a number of man made and natural features, then processed and interpreted in an iterative fashion to arrive at a consensus interpretation. The reality of any anomaly is that its significant needs to be tested by drilling. Where drilling has proven that a particular technique, in a particular geological situation, specifically within an area being explored, works reliably, then a higher confidence on any anomaly could be gathered. At this time, this remains solid information that supports the company's plan to drill at Nockelberg, and represents a derisking of the determination of final drill hole locations, and orientation or dip angle adjustments that could be made to have a better chance of intersecting mineralisation. All IP sections that were recorded have been included in this release.

Other substantive exploration data

Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.

- All substantive exploration information has been reported at this time for all the projects.
- The Company is undertaking a detailed review of the Schellgaden project in light of the historic work completed which includes a historic NI43-101 (completed by an underlying vendor and does not meet current code requirements), a historic prefeasibility study, and preliminary metallurgical testing. This cannot be reported at this time as significant elements to the reports and assumptions need to be verified or updated. This information, if proven to be accurate or currently acceptable, could be material in the future.
- The geological modelling reveals units which could host mineralisation. The
  modelling further suggests that the old mine area, based on historic maps and
  sections, might be of limited extent. Further work will be undertaken to
  understand potential rock volumes, which forms the basis of the Exploration
  Target which has been completed.
- The Exploration Target Statement for the Leogang Area (Nockelberg Prospect) and Schellgaden Area (Schellgaden Prospect), is conceptual in nature in terms of both potential grade and potential size. Further, its uncertain if future exploration as detailed in this release, will result in any discovery which leads to the declaration of any Mineral Resource as defined by the JORC Code (2012)
- The complex anomalies of mineralised dolomites in the Nockelberg prospect comprises the following
  - o SP negative readings below -30 mV
  - DC slightly higher resistivity than quartz bearing schist and sandstones, plus their accompanying graphitic shales
  - o IP very strong, zoned dominating signals
  - Mag elevated anomaly zones
- By surveying a strike profile centred on the old mine workings, an initial
  reference data set for IP, SP, DC, and Mag interpretations was created. This gives
  a qualitative impression about the magnitudes of RES, SP, IP and magnetics.

Further work

- The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).
- Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.
- The Company has prepared a 2 year program with the specific intention of advancing the understanding of any potential mineralisation to be substantial enough to be proven through drilling as a resource at the Leogang/Nockelberg and Schellgaden areas. As such a combined circa \$4.1m program across the material projects has been preliminarily designed to:
  - Survey main underground mines and adits, complete topographic surveys of the surface to enable final drill planning:
  - Complete core drilling at the Leogang/Nockelberg and Schellgaden areas to prove the existence of a resource that could be extended;
  - Complete additional regional/local geochemical and geophysical surveys



Criteria	Commentary
	to assist in proving direction of extension of any mineralised body/unit;  Complete an updated prefeasibility study, inclusive of metallurgical studies, and resource modelling where a mineralised body can be elevated to a Mineral Resource under the JORC (2012) requirements. The Company believes that by concentrating on the Leogang/Nockelberg and Schellgaden areas, this could be forthcoming quite quickly.  The Company will undertake metallurgical test work, environmental baseline studies and various engineering studies should the early stage drilling program result in the discovery of potentially economic mineralisation  Further work will include the continuing assembly of, and translation of (where appropriate), all historic information that can be found on the projects  The geological modelling reveals two units which could host mineralisation. The modelling further suggests that the old mine area, based on historic maps and sections, might be of limited extent. Further work will be undertaken to understand potential rock volumes, which together with the geochemical reconnaissance survey results provides a basis for an Exploration Target assessment  Prior to drilling the Nockelberg prospect, the Company will finalise the results of recent geochemical sampling, geophysical acquisition and their influence on the drilling location and order of the program.  Prior to drilling the Schellgaden prospect, the Company will continue to perform geological modelling based on evolving surface and subsurface understanding.  More geophysical work could be done in the future, if drilling at Nockelberg proves that anomalous measurements are indicative of continued mineralisation being present. As such, it could be used to define a larger objective within the licence area, and across into the Leogang East area.

Disclaimer: Forward-looking statements are statements that are not historical facts. Words such as "expect(s)", "feel(s)", "believe(s)", "will", "may", "anticipate(s)" and similar expressions are intended to identify forward-looking statements. These statements include, but are not limited to statements regarding future production, resources or reserves and exploration results. All of such statements are subject to certain risks and uncertainties, many of which are difficult to predict and generally beyond the control of the Company, that could cause actual results to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. These risks and uncertainties include, but are not limited to: (i) those relating to the interpretation of drill results, the geology, grade and continuity of mineral deposits and conclusions of economic evaluations, (ii) risks relating to possible variations in reserves, grade, planned mining dilution and ore loss, or recovery rates and changes in project parameters as plans continue to be refined, (iii) the potential for delays in exploration or development activities or the completion of feasibility studies, (iv) risks related to commodity price and foreign exchange rate fluctuations, (v) risks related to failure to obtain adequate financing on a timely basis and on acceptable terms or delays in obtaining governmental approvals or in the completion of development or construction activities, and (vi) other risks and uncertainties related to the Company's prospects, properties and business strategy. Our audience is cautioned not to place undue reliance on these forward-looking statements that speak only as of the date hereof, and we do not undertake any obligation to revise and disseminate forward-looking statements to reflect events or circumstances after the date hereof, or to reflect the occurrence of or non-occurrence of any events.