

# TRACE MAGMATIC NICKEL SULPHIDES INTERSECTED IN LATEST AIRCORE DRILLING PROGRAM

**Constellation Resources Limited** (the "**Company**" or "**Constellation**") is pleased to report the identification of nickel sulphides in Proterozoic basement rocks from its recently completed air-core drilling program on tenement E28/2403 (70% Constellation, 30% Enterprise Metals Limited (ASX: ENT)).

#### **HIGHLIGHTS**

- Preliminary optical petrological examination from selected air-core ("AC") samples in three drillholes
  has indicated the presence of trace polysulphide blebs comprising of supergene violarite after
  former pentlandite (nickel sulphides) and chalcopyrite (copper sulphides) in favourable peridotite
  and pyroxenite (both olivine bearing) host rocks (Figures 1 & 2).
- The location of the sulphide blebs are within intergranular spaces of the minerals and the globular forms suggests a magmatic origin. The presence of nickel sulphides in peridotite/olivine pyroxenite host rocks and supportive pathfinder geochemistry, demonstrates the intrusion nickel sulphide fertility and prospectivity to potentially host an economically viable deposit.
- The samples were collected from the second phase of AC drill program completed in November. The AC drilling program tested for geochemical extensions from KAC0091, which returned a promising broad intersection of 21m @ 0.21% Ni, 0.08% Cu, 0.03% Co, 52 pbb (Pt+Pd), 12ppb Au to bottom of hole ("BOH") in geophysical intrusion Target 1 (Figure 4). Geophysical Target 1 is one of the largest intrusions in the area. Assay results are currently pending.
- Company remains well-funded for all planned activities.





Figures 1 & 2 – Photomicrographs of KAC0124 (111-112m) in reflected light – Left: Central grain violarite (Vo) after pentlandite with masses of pyrite (Py2) after pyrrhotite and Right: Polysulphide bleb of pyrite after pyrrhotite and violarite after pentlandite.

#### For further information, please contact:

**Peter Woodman** 

Managing Director Tel: +61 8 9322 6322 **Peter Muccilli** 

Technical Director Tel: +61 8 9322 6322



#### RECONNAISSANCE AIRCORE DRILLING PROGRAM

The Company has recently completed its AC drilling program on tenement E28/2403 (70% Constellation, 30% Enterprise Metals Limited (ASX: ENT)). The tenement is located between Legend Mining Limited's (ASX: LEG) "Mawson" and Galileo Mining Limited's (ASX: GAL) "Lantern" nickel sulphide discoveries in the Fraser Range (Figure 5).

The drill program was undertaken at one of five promising discrete nickel-copper-cobalt-platinum group elements ("Ni-Cu-Co-PGE") geochemical footprints that have been identified within geophysical Targets 1, 2 and 4 from the maiden AC drilling program that was completed in July 2020. The follow up AC drilling program was comprised of 16 holes totalling 1,552 metres and was designed to undertake infill drill spacing around KAC0091 down to 100 metre centres (Figures 3 & 4). KAC0091 returned a promising broad intersection of **21m @ 0.21% Ni, 0.08% Cu, 0.03% Co, 52 pbb (Pt+Pd), 12ppb Au to BOH** during the Company's maiden AC drilling program (Refer to ASX Announcements dated 14/7/2020 and 29/10/2020). All holes had successfully reached the basement rocks and to blade refusal beneath a younger Eucla basin cover sequence (80 metre – 100 metre thickness).

The current AC drilling program included two holes over the surface projection of the low order interpreted moving loop electromagnetic ("MLTEM") conductor which was previously reported in the Company's September 2020 Quarterly Report.

Due to the current high demands placed on all commercial sample laboratories, assay turnarounds have slowed considerably. Once assay results are received and processed, the new information should refine the current broad Ni-Cu-Co-PGE basement anomaly that is centred by KAC0091 and also potentially assist vector towards better developed nickel sulphide zones. High priority follow-up work programs will be undertaken once all results are received and processed.

#### **IDENTIFICATION OF TRACE MAGMATIC NICKEL SULPHIDES**

Preliminary optical petrological examination from selected AC samples in three drillholes (KAC0124, KAC0131 and KAC0135) has indicated the presence of trace polysulphide blebs comprising of supergene violarite after former pentlandite (nickel sulphides) and chalcopyrite (copper sulphides) in favourable peridotite and pyroxenite (both olivine bearing) host rocks.

The presence of nickel sulphides in peridotite/olivine pyroxenite host rocks and supportive pathfinder geochemistry, clearly demonstrates the intrusion nickel sulphide fertility and prospectivity to potentially host an economically viable deposit somewhere within it.

Over the past year, the Company has systematically advanced its Transline nickel tenement portfolio after each exploration phase. This includes postulating the presence of favourable mafic intrusions that are concealed undercover, the establishment of promising Ni-Cu-Co-PGE anomalies in AC drilling, to the identification of nickel sulphides within a favourable intrusion suite of rocks.

The confirmation of trace magmatic nickel sulphides from petrological examinations in the three drillholes (total sulphides content <1% for each sample) is an important early stage milestone in greenfield nickel exploration and further validates the basement geochemical anomalies that are currently defined across geophysical Target 1 (Figure 4) and the greater prospectivity of the mafic/ultramafic intrusions interpreted to be within the greater tenement area.



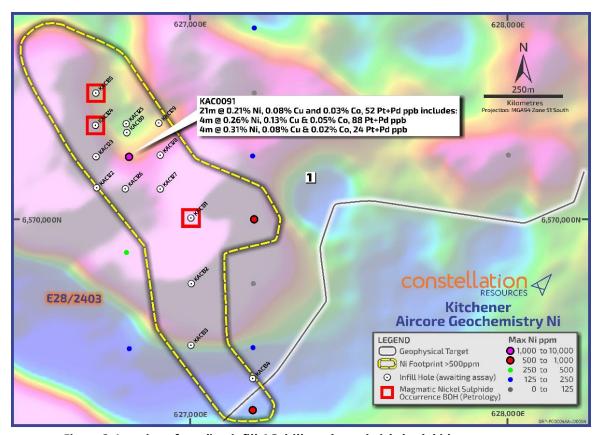


Figure 3: Location of pending infill AC drill results and nickel sulphide occurrences.

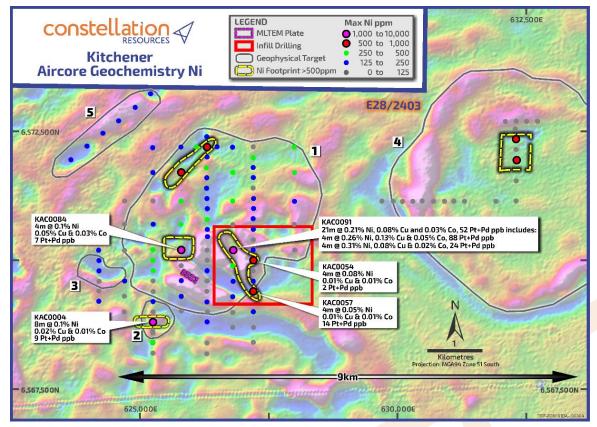


Figure 4: Previous AC drill results including geochemical footprints, MLTEM anomaly and area of infill drilling over aero-magnetics.



#### **OTHER WORK PROGRAMS**

#### **Phase 2 MLTEM Survey**

A second phase MLTEM survey was completed this month over geophysical Targets 6, 8 and 10 (refer to the Company's September 2020 Quarterly Report for further details). The MLTEM survey results are expected to be received next quarter and outcomes will assist in the final design of the Exploration Incentive Scheme drill holes that are planned to be completed in HY1 2021.

#### ABOUT THE FRASER RANGE TENEMENTS

The Company manages the Orpheus Project (Figure 5), comprising six tenements covering approximately 558km² in the Fraser Range province of Western Australia. In the Fraser Range, certain Proterozoic mafic/ultramafic intrusion suites are prospective to host nickel-copper sulphide mineralisation. The region is currently experiencing high levels of exploration activity for nickel following the Nova, Silver Knight, Mawson and Lantern discoveries.

The Orpheus Project includes a 70% interest in three mineral exploration licences (E28/2403, E63/1281 and E63/1282) and one mineral exploration licence application (ELA63/1695). The granted exploration licences form part of a joint venture between the Company (70%) and Enterprise Metals Limited (30%, ASX: ENT). Pursuant to the joint venture agreement, the Company is responsible for sole funding all joint venture activities on the tenements, which form part of the joint venture, up to completion of a bankable feasibility study.

Additionally, the Company has further 100% interests in two exploration licences (E28/2738 and E28/2957).

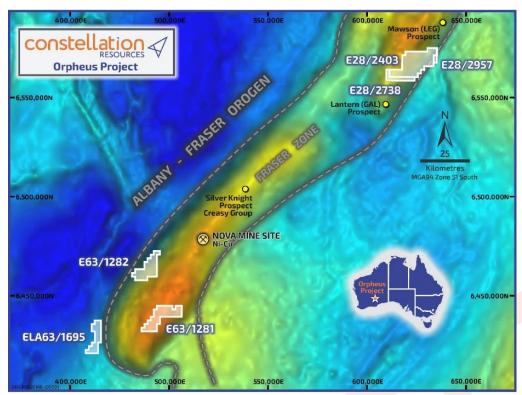


Figure 5: Tenement Plan - Orpheus Project.



#### **COMPETENT PERSONS STATEMENT**

The information in this report that relates to Exploration Results is compiled by Peter Muccilli, a Competent Person who is a Member of the Australian Institute of Mining and Metallurgy. Mr Muccilli is a Technical Director of Constellation Resources Limited and a holder of options in Constellation Resources Limited. Mr Muccilli has sufficient experience that is relevant to the styles of mineralisation and types of deposit under consideration, and to the activity being undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (JORC Code). Mr Muccilli consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

#### FORWARD LOOKING STATEMENTS

Statements regarding plans with respect to Constellation's project are forward-looking statements. There can be no assurance that the Company's plans for development of its projects will proceed as currently expected. These forward-looking statements are based on the Company's expectations and beliefs concerning future events. Forward looking statements are necessarily subject to risks, uncertainties and other factors, many of which are outside the control of the Company, which could cause actual results to differ materially from such statements. The Company makes no undertaking to subsequently update or revise the forward-looking statements made in this announcement, to reflect the circumstances or events after the date of that announcement.

This ASX Announcement has been approved in accordance with the Company's published continuous disclosure policy and authorised for release by the Company's Managing Director, Peter Woodman.



# **Appendix 1: Drill Hole Data**

Table 1: Summary of Sulphide Habit, Type and Visual Percentage

Hole ID	Interval (m)	Sulphide Habit	Sulphide Type	Combined Sulphides % (Visual Estimate)	Rock Type
KAC0124	111-112	Blebby - disseminated	Pyrite-Violarite-Chalcopyrite	<1%	Olivine Pyroxenite/ Peridotite
KAC0131	103-104	Blebby - disseminated	Pyrite-Violarite-Chalcopyrite	<1%	Olivine Hornblende Pyroxenite
KAC0135	106-107	Blebby - disseminated	Pyrite-Violarite-Chalcopyrite	<1%	Olivine Pyroxenite

Petrological Descriptions provided by Minerex Services Pty LTD

**Table 2: Aircore Drilling Collar Details** 

Hole ID	MGA51East	MGA51North	MGARL	Dip	EOH Depth
KAC0122	626704	6570101	190	-90	84
KAC0123	626702	6570199	190	-90	87
KAC0124	626700	6570298	190	-90	112
KAC0125	626797	6570303	190	-90	81
KAC0126	626794	6570098	190	-90	93
KAC0127	626904	6570097	190	-90	87
KAC0128	626904	6570204	190	-90	88
KAC0129	626900	6570305	190	-90	86
KAC0130	626799	6570275	190	-90	85
KAC0131	627001	6570006	190	-90	104
KAC0132	627002	6569799	190	-90	113
KAC0133	627001	6569605	190	-90	114
KAC0134	627196	6569500	190	-90	114
KAC0135	626701	6570400	190	-90	107
KAC0136	625929	6569737	190	-90	102
KAC0137	626049	6569650	190	-90	95



# Appendix 2: JORC Code, 2012 Edition - Table 1

## **Section 1 Sampling Techniques and Data**

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	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.  Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Aircore (AC) drilling was undertaken to generate representative metre samples from the surface to the bottom of hole.
		The non-transported portion for each hole was spear sampled to create a 1 metre representative sample.
		All samples weighed between 2-3kg. Samples had generally minimal dampness with isolated wet samples encountered.
		Samples were sent to an independent commercial assay laboratory.
	Aspects of the determination of mineralisation that are Material to the Public Report.	All assay submitted for sample preparation comprised oven drying, jaw crushing, pulverising and splitting to produce a representative assay charge pulp. Samples to be analysed using four Acid digest and read by ICP-OES/ ICP-MS, reporting 48 elements including Ag, Al, As, Ba, Bi, Ca, Cd, Ce, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, In, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, Re, S, Sb, Sc, Se, Sn, Sr, Ta, Te, Th, Ti, Tl, U, V, W, Y, Zn and Zr.
	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.	
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).	Aircore drilling was undertaken by Raglan Drilling using a 90mm drill bit.
Drill sample	Method of recording and assessing core and chip sample recoveries and results assessed.	Poor sample recoveries were visually estimated and recorded on sample log sheets.
recovery	Measures taken to maximise sample recovery and ensure representative nature of the samples.	The sample cyclone is routinely cleaned at the end of each rod run (3m) or when deemed necessary.
	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.	There is insufficient data to determine if there is a sample bias between sample recoveries and assay grades.
Logging	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.	Geological logging of air core drill spoils was done on a visual basis for lithology, grainsize, mineralogy, colour and weathering.
	Whether logging is qualitative or quantitative in nature.  Core (or costean, channel, etc) photography.	Logging was further aided with the collection of 1m chip trays.  All drill holes were logged in their entirety.
	The total length and percentage of the relevant intersections logged.	Petrological analysis and descriptions were undertaken by independent petrological consultant Minerex Services Pty Ltd.



Criteria	JORC Code explanation	Commentary
Sub- sampling	If core, whether cut or sawn and whether quarter, half or all core taken.	All aircore drill samples were collected using a spear or scoop (2-3kg). Both damp and dry samples were collected.
techniques and sample preparation	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	QAQC reference samples and duplicates were routinely submitted with each sample batch.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	The size of the sample is considered appropriate for the mineralisation style sought and for the analytical technique
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	used.
	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.	
	Whether sample sizes are appropriate to the grain size of the material being sampled.	
Quality of assay data and laboratory tests	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.  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.  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.	Aircore samples will be analysed for a multi-element suite by ICP-MS following a four-acid digest.  These assay methods are considered appropriate.  QAQC standards and duplicate samples were included routinely (approximately 1 for every 40 samples). In addition, internal laboratory batch standards and blanks were also undertaken adding to reliance is placed on laboratory procedures adding to the assurance of the reported results.  All samples submitted to NATA accredited provider - Minanalytical Laboratory Services Australia Pty Ltd, located in Perth using methods; MA4020; 48 Elements ICP-OES / ICP-MS Package (multi-elements).
Verification of sampling and assaying	The verification of significant intersections by either independent or alternative company personnel.  The use of twinned holes.  Documentation of primary data, data entry procedures,	Field data is collected on site using a standard set of logging.  Data is then upload into the access database.  Assays are as reported from the laboratory and stored in the Company database and have not been adjusted in any way.
	data verification, data storage (physical and electronic) protocols. Discuss any adjustment to assay data.	Significant intersections were verified by senior exploration personnel.
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.	The drillhole collar was surveyed with a handheld GPS unit with an accuracy of ±5m which is considered sufficiently accurate for the purpose of the reconnaissance drill hole program.
	Specification of the grid system used.  Quality and adequacy of topographic control.	All co-ordinates are expressed in GDA94 datum, Zone 51.  Regional topographic control has an accuracy of ±2m based
Data spacing and distribution	Data spacing for reporting of Exploration Results.  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.	on detailed DTM data collected in 2019 aerial surveys.  Aircore drilling spacing was at a nominal 500m x 400m with latest infill holes to 100m spacings on selected traverses.  Drillholes were sampled in the residual portion of the hole with the occasional need to sample into the transported cover if the regolith profile was not well developed.
	Whether sample compositing has been applied.	



Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.  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.	The relationship between drill orientation and mineralisation is unknown.
Sample security	The measures taken to ensure sample security.	Each sample was put into a prenumbered draw string calico bag, tied off and then several placed in a polyweave bag which was zip tied closed.  The polyweave bags were delivered directly to the assay laboratory in Kalgoorlie by company personnel.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	The Company carries out internal audits/reviews of procedures, however no external reviews have been undertaken.

### **Section 2 Reporting of Exploration Results**

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

Criteria	JORC Code explanation	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.	The exploration results in this report relate to Exploration Licenses E28/2403 (under renewal application). Tenure in the form of Exploration Licenses with standard expiry conditions and options for renewal.  E28/2403 forms part of a joint venture between Constellation
		Resources Limited (70%) and Enterprise Metals Limited (30%, ASX: ENT).
		Under the terms of the JV agreement, Constellation Resources is required to sole fund all activities on these tenements until completion of a Bankable Feasibility Study.
		There are no Native Title Claims north of the Transline for tenements E28/2403 and ELA28/2957. South of the Transline, tenements E28/2403 and E28/ 2738 are covered by the Ngadju Native Title Claim.
		Tenement E28/2403 and ELA28/2957 are on vacant ground north of the Transline. South of the Transline, a portion of tenement E28/2403 and all of tenement E28/2738 are within the Boonderoo Pastoral Station
		The tenements are in good standing and there are no known impediments.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	Limited regional exploration on E28/2403, E28/2738 was undertaken by previous companies and included, geophysical, geochemical surveys and limited drilling.
		Historical geophysical surveys included an airborne magnetic and isolated ground electromagnetic traverses. Geochemical surveys included soil and auger sampling.
		WAMEX Open file search of historic drilling indicate two RC holes were completed in the area. Both holes are located



Criteria	JORC Code explanation	Commentary
		outside current target areas.
Geology	Deposit type, geological setting and style of mineralisation.	The targeted deposit types and styles of mineralisation are nickel- copper-cobalt (Ni-Cu-Co) magmatic sulphide systems such as the Nova-Bollinger deposit and Tropicana style gold mineralisation.
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:  o easting and northing of the drill hole collar o elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar o dip and azimuth of the hole o 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.	Refer to table of drillhole collars in Appendix 1.
Data aggregation methods	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.	The weighted averages of individual drill holes are presented.
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 be reported.  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').	Drillhole intercepts/intervals are measured downhole in metres.
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 views.	Project and drillhole location maps have been included in the body of the report.
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.	All available relevant information is presented.





Criteria	JORC Code explanation	Commentary
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.	Detailed 50m line spaced aeromagnetic data and semi regional gravity geophysical datasets has been used for interpretation of 10 initial intrusion targets in the underlying geology.  Technical details on these geophysical datasets and targets are disclosed in the Company's ASX release on the 20/01/2020.
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.	Process all assay results once received and likely further follow up drilling will be undertaken.  Process results of high-powered moving loop electromagnetic survey over geophysical Targets 6-10.  Further reconnaissance aircore drilling over Targets 6-10 which are located south of the Transline as part of the EIS grant.  Further aircore program aims to identify concealed maficultramafic complexes and potential pathfinder geochemical anomalism in regolith.