

12 December 2022

TENNANT CREEK-STYLE HOST ROCKS AND EXTENSIVE IOCG ALTERATION INTERSECTED IN MAIDEN DRILL PROGRAM AT GEORGINA

First hole intersects ironstone host rocks, IOCG alteration and copper-bearing minerals

Key Highlights

- > First hole completed at the highly prospective Leichhardt East target to a depth of 699.8m.
- > Anomalous bornite and chalcopyrite (copper) mineralisation intersected.
- > Ironstones with sulphide veining indicative of IOCG ore-forming processes at work.
- > Widespread chlorite and hematite alteration consistent with IOCG-systems.
- > Geological similarity to hematite-dominant Tennant Creek deposits.
- > Down-hole EM surveys to be undertaken on this and other holes in Q1 2023.

Astro Resources NL (ASX: ARO) ("ARO", "Astro" or "the Company") is pleased to advise that it has completed its first program of diamond drilling at the recently acquired 80%-owned Georgina IOCG Project in the Northern Territory (Figure 1).

Drill-hole KNXLE001RDD was completed to a total depth of 699.8m, targeting a zone of coincidence between modelled magnetic and gravity geophysical responses, known as the **Leichhardt East** IOCG prospect.

Preliminary geological logging of the hole has identified a number of occurrences of strong IOCG-style alteration, copper-bearing minerals and the presence of hematitic ironstone. The presence of ironstones in the hole is considered highly encouraging, as ironstones represent a geochemical depositional mechanism within which gold and copper may precipitate from ore-forming fluids, according to research by Geoscience Australia¹. Furthermore, the observed ironstone contains veinlets of sulphide minerals such as pyrite and chalcopyrite (a copper mineral), indicating a depositional process at work.

Astro's Chairman, Tony Leibowitz commented: "We are delighted to have been able to execute our maiden drilling program so smoothly and to achieve such a result. Leichhardt East was rated by our exploration team as one of the best targets in the area, and it has delivered on this promise with the hole intersecting prospective ironstones – which have been identified by the experts at Geoscience Australia as a trap for copper and gold deposits. The presence of copper minerals in the ironstones at Leichhardt East indicates that these processes are at work, highlighting the excellent prospectivity of the region."

¹ Tennant Creek – Mount Isa IOCG mineral potential assessment *in* Exploring for the Future: Extended Abstracts, *Murr et al., Geoscience Australia* 2020





Figure 1. Leichhardt East cross-section with lithology and inverted geophysical isosurfaces.

Figure 2. Hematitic ironstone and pyrite (sulfide mineral) mineralisation (482.3m).



Leichhardt East is a high-intensity coincident magnetic and gravity anomaly, located close to regionalscale faults and approximately 10km from Middle Island's (ASX: MDI) Crosswinds prospect (Figure 10), where copper mineralisation is exposed at surface¹.

The prospect was initially identified as a high-ranking target in an SRK Australia IOCG prospectivity review and targeting exercise undertaken in 2021 by Greenvale Mining Ltd (ASX: GRV, Greenvale), warranting further work being undertaken in the vicinity in 2021-22. This included ground gravity and airborne magnetic surveying, followed by unconstrained geophysical modelling to generate 3D surfaces for drill targeting.

The successful completion of the first hole at the Leichhardt Prospect marks an important milestone for the Company's exploration efforts at Georgina, representing the first on-ground exploration campaign since shareholder approval for the acquisition of the project was received on 16 November 2022.





Figure 3 – Coarse-grained granite (left, 247.7m) and brecciated siltstone (right, 581.5m).





¹ ASX: MDI 2 June 2022 'Two drill ready targets at Crosswinds'



Figure 4 – Veinlet/in-fill sulfide minerals pyrite (py) and chalcopyrite (cpy, yellow) in hematitic ironstone (689.5m).



Figure 5 – Copper minerals chalcopyrite (cpy, yellow) and bornite (bn, dark blue) in chlorite-altered and quartzveined metasedimentary rocks (through hand-lens) at 577.3m.



Figure 6 – Copper mineral bornite (dark blue) in chlorite-altered, quartz-veined metasedimentary rocks (577.4m),



Drill-hole KNXLE001RDD drilled through the Georgina Basin limestone cover sequences to a depth of 210m, and Helen Springs basalt to 232.4m, where Proterozoic granitic basement rocks were intersected. Coarse-grained granite, interpreted to be part of the Tennant Supersuite, persisted to 313m, beyond which Warramunga-equivalent Alroy formation siltstones and minor sandstones were evident to the end of the hole at 699.8m, interrupted by an occurrence of felsic igneous rocks from 628-654m.

The siltstones were variably hematite, chlorite and lesser sericite altered. Chlorite was the dominant alteration mineral, ranging from a dull green to intense, almost black presentation, interpreted to be a more iron-rich variant of the mineral.

These rocks were frequently faulted and, from approximately 550m to the end of the hole, contained faultoffset, hematite-dominant ironstones. The ironstones exhibited low-level magnetism, suggesting the presence of minor magnetite amongst dominant hematite.

The increasing presence of ironstone, a high-density rock type, corresponded broadly with the hole approaching the centre of the modelled gravity anomaly and thus may explain the gravity anomalism.

Drilling at nearby prospects earlier this year by the previous owner of the project, Greenvale Mining, intersected the interpreted Alroy Formation, equivalent to the Warramunga formation which hosts high-grade copper-gold mineralisation at Tennant Creek².

The Greenvale holes intersected variably hematite-chlorite altered rocks with common brecciation and identified minor chalcopyrite (copper mineral) mineralisation³.

The Leichhardt East hole builds on the work conducted by Greenvale, with the latest drilling not only intersecting prospective alteration and confirming the presence of copper minerals, but also intersecting the rock-type that is known to host copper-gold mineralisation in IOCG deposits elsewhere.



Figure 7 – Hematitic ironstone cross-cut by later hematite-bearing veins (689.2m).



² ASX: GRV 29 June 2022 'First Diamond hole at the Banks Target intersects IOCG-style Alteration'

³ ASX: GRV 27 July 2022 'Diamond hole at Leichhardt confirms IOCG potential at Georgina



Figure 8 – 'Bleed' textured hematite alteration of siltstone (588m).



Figure 9 – Pyrite vein cutting hematitic ironstone (663.8m).





Figure 10 – Astro's East Tennant tenement holding, showing neighbouring holders and key regional prospects.

East Tennant - a new exploration Frontier

The East Tennant province has been the subject of intense geoscientific investigation by both Geoscience Australia and the Northern Territory Geological Survey for over five years. Pre-competitive work undertaken as part of the Federal Government's \$225 million Exploring for the Future program (EFTF) included solid geology interpretation, alteration proxy mapping and mineral prospectivity mapping for Iron Oxide Copper Gold (IOCG) deposits.

The collaborative MinEx CRC National Drilling Initiative, conducted in late 2020, confirmed the highly prospective nature of the region by intersecting prospective host rocks, IOCG-style alteration and sulphide mineralisation as part of a 10-hole program completed at East Tennant.

IOCG deposits are typically large, economically attractive copper-gold deposits with some smaller highgrade variants – most notably those at Tennant Creek. This style of deposit contains elevated levels (10-60wt%) of the iron oxide minerals magnetite and hematite, which gives rise to their (typically) elevated magnetic and gravity (density) properties. Australian IOCG's include the South Australian Olympic Dam, Prominent Hill, and Carrapateena deposits, Ernest Henry in north-west Queensland, and the high-grade Northern Territory Warrego and Juno deposits, located west of the Georgina Project at Tennant Creek.





Figure 11 – Bouger gravity anomaly image, existing drill-holes and current hole design 95DD_01.

Co-funding Grant Supports Georgina Exploration Drilling

The Leichhardt East drilling is supported an NT Government grant, as a result of a successful application for grant funding under Round 15 of the Resourcing the Territory Geophysics and Drilling Collaborations Program.

Up to \$171,050 will be funded as part of the grant, which constitutes 50% of eligible drilling costs. The Company is pleased to have had the support of the NT Government in the drilling of the exploration drill hole at Leichhardt East, which adds not only to the prospectivity of the Georgina project, but also to the broader geological understanding of the East Tennant region.

The Company would like to acknowledge the Northern Territory Geological Survey for their continued support and their commitment to establishing the East Tennant Creek region as a Tier-1 exploration area.





Figure 12. Analytic Signal magnetic anomaly image, existing drill-holes and current hole design 95DD_01.

Drilling and Next Steps

Drilling of the hole was completed by well-regarded drill contractor DDH1 Drilling Pty Ltd. DDH1 has the most experienced drill operators with respect to ground conditions particular to the region, having conducted the Federally-funded 2020 MinEx CRC National Drilling Initiative (NDI) East Tennant drilling, as well as multiple exploration drill holes for junior explorers in the region. The hole was completed without complication and on time, within the 2-3 week timeframe as announced at the commencement of drilling.

The hole has been cased with 40mm PVC casing, to allow for down-hole geophysical surveying. The Company intends to conduct down-hole surveys on not only the Leichhardt East hole, but also the drill-holes at the Banks and Leichhardt West prospects in Q1 of 2023.

The down-hole surveys will be designed to increase the Company's understanding of the magnetic field characteristics of the region, and enhance future iterations of magnetic models and subsequent drill targeting.

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Drill core from the hole will undergo detailed geological logging, cutting and sampling ahead of formal laboratory assay. Select samples will also be taken for magnetic remanence testing by CSIRO, and a suite of samples for petrological thin section preparation and microscopy.

Hole ID	East (MGA)	North (MGA)	RL	Dip	Azimuth (MGA)	Depth
KNXLE001RDD	586519	7806821	225	-70	320.6	699.8

Table 1. Leichhardt East drillhole collar details – as drilled



Figure 13. Drill contractor DDH1 set up on KNXLW001RDD at the start of night shift

This announcement has been authorised for release by the Board.

More Information

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The information in this report that relates to Exploration Results associated with the NT Georgina project is based on information compiled by Mr Matthew Healy, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM Member number 303597). Mr Healy is a full-time employee of Astro Resources NL. Mr Healy has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Healy consents to the inclusion in the report of the matters based on his information in the form and context in which it appears



Section 1 Sampling Techniques and Data

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. Aspects of the determination of mineralisation that are Material to the Public Report. 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. 	NQ drill core to be cut in half lengthwise and sampled on nominal 1m intervals or as determined by geological boundaries Altitude for airborne magnetic surveying was determined using a Reninshaw ILM-500-R laser with a vertical accuracy of 0.1m Base station magnetic field monitoring was completed using GEM Overhauser and Scintrex ENVIMAG proton precession magnetometers with 1.0 and 0.5 Hz sampling rates respectively Radiometric surveying was completed using an RSI RS-500 gamma-ray spectrometer with a sampling rate of 2Hz Magnetic surveying was completed using a Geometrics G- 823A caesium vapour magnetometer at a 20Hz sampling rate Gravity data collected using a CG-6 Autograv Gravity Meter and ESVE300PRO GNSS Rover Receiver and Base Receiver
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).	Mud-rotary methods employed to bit refusal in Banks and Leichhardt West drill holes, with HQ and NQ diamond core drilling methods thereafter Reverse Circulation pre-collar at Leichhardt East to 147m depth and HQ diamond methods thereafter Drill core that has intersected basement (Proterozoic) rocks has been oriented where possible
Drill sample recovery	 Method of recording and assessing core and chip sample recoveries and results assessed. Measures taken to maximise sample recovery and ensure representative nature of the samples. 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. 	Core blocks inserted between runs by drill crew record run length and recovered core Core recovery logged by field staff/contractors at the point of core markup
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. Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. The total length and percentage of the relevant intersections logged. 	Drill core logged by field geologists to capture interpreted lithology, weathering, alteration and veining, and structure orientations where appropriate Core logging is largely qualitative, with some quantitative estimates of notable minerals Core tray photography undertaken of wet drill core Preliminary logging undertaken on KNXLE001RDD with detailed logging to be completed prior to cutting of drill core All drill core logged
Sub-sampling techniques and sample preparation	 If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparation technique. Quality control procedures adopted for all subsampling stages to maximise representivity of 	N/A No sample assays reported

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	•	samples. 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.	N/A No sample assays reported
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, data verification, data storage (physical and electronic) protocols. Discuss any adjustment to assay data.	Sample intervals to be assigned a unique sample identification number prior to core cutting and analysis Significant intersections checked against drill core photography and QAQC results by a company geologist Tabulated data provided for each assayed interval for the announced elements.
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.	Drill collar location determined using a Garmin hand-held GPS with location reported in GDA94 MGA Zone 53 Downhole surveys to be determined using a north-seeking gyro Magnetic survey flight path recovery was established using a NovAtel OEM 719 DGPS Receiver with a 0.4m RMS accuracy and a 2Hz sampling rate
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. Whether sample compositing has been applied.	Drill spacing is appropriate for early exploration purposes Gravity station measurements taken at a 200x200m grid pattern Flight lines were spaced at 100m with perpendicular tie- lines at 1000m intervals.
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.	Insufficient information available due to early exploration status
Sample security	•	The measures taken to ensure sample security.	Samples delivered from the drill site to Freight agent by Company staff/contractors for delivery to external laboratory
Audits or reviews	•	The results of any audits or reviews of sampling techniques and data.	Not applicable



Section 2 Reporting of Exploration Results

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. 	Tenements held in 80% Astro subsidiary Knox Resources Pty Ltd. Remaining 20% interest held by Greenvale Mining Ltd Drilling conducted on granted exploration tenure Landholder access agreement in place
Exploration done by other parties	 Acknowledgment and appraisal of exploration by other parties. 	Previous exploration conducted by Greenvale Mining, comprising airborne magnetic and ground gravity surveying, desktop studies and exploration drilling. Previous Greenvale exploration referenced in this announcement from the following ASX releases: ASX: GRV 29 June 2022 'First Diamond hole at the Banks Target intersects IOCG-style Alteration' ASX: GRV 27 July 2022 'Diamond hole at Leichhardt confirms IOCG potential at Georgina' Copper mineralisation identified at the nearby Crosswinds prospect by Middle Island Resources Ltd referenced in this announcement from the following ASX release: ASX: MDI 2 June 2022 'Two drill ready targets at Crosswinds'
Geology	Deposit type, geological setting and style of mineralisation.	The principal target deposit style is iron-oxide- copper-gold (IOCG). IOCG deposits are typically characterized by associated magnetic and gravity responses due the prevalence of dense and often magnetic iron oxide minerals as a substantial portion of the deposit footprint mineralogical constitution. IOCG deposits are known in the Tennant Creek region and recent Geoscience Australia prospectivity analysis indicates that basement rocks east of Tennant Creek, the location of the Company tenements, are prospective for IOCG deposits.
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 RL (Reduced Level – elevation above sea level in metres) of the drill hole collar dip and azimuth of the hole down hole length and interception depth 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 	Drillhole KNXBA001RDD collared at 588116 E 7809650 N and 225m RL Drillhole KNXLW001RDD collared at 584975 E, 7806808 N and 225m RL Drillhole KNXBA001RDD setup at 127° azimuth and -75° dip Drillhole KNXLW001RDD setup at 326.9° azimuth and -68.3° dip Drillhole KNXBA001RDD drilled to a total depth of 550m Drillhole KNXLW001RDD drilled to a total depth of 600.8m Drillhole KNXLE001RDD as-drilled setup details tabulated in body of announcement Collar locations and azimuths reported in



	clearly explain why this is the case.	GDA94 MGA Zone 53
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, 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. 	N/A
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'). 	Insufficient information available due to early exploration status
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. 	Included in ASX announcement
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. 	This release describes all relevant information
Other substantive exploration data	 Other exploration data, if meaningful an material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bull samples – size and method of treatmen metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances. 	d This release describes all relevant information
Further work	 The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-our 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. 	Proposed work outlined in the body of the announcement

