ASX Release **14th May 2014**

DRILLING INTERSECTS MAGMATIC NI-CU SULPHIDES AT ZANTHUS

Highlights

- **First ever drill program identifies abundant, definitively *magmatic* sulphide blebs of intergrown pyrrhotite (Fe), crystalline pentlandite (Fe+Ni) and some chalcopyrite (Fe+Cu) within ultramafic rock**

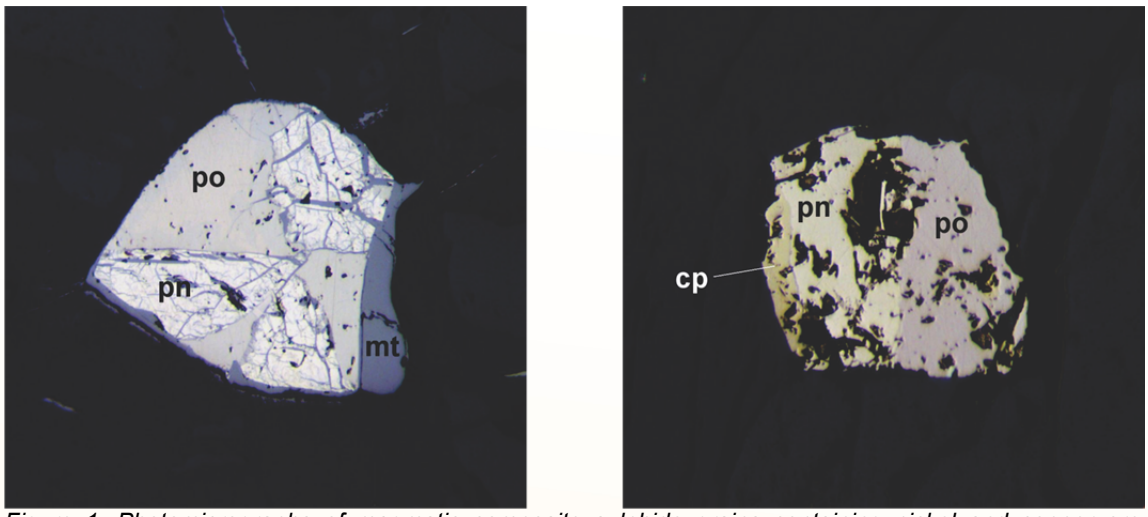

Figure 1. Photomicrographs of magmatic composite sulphide grains containing nickel and copper ore minerals from ZRC086 96-100m. po = pyrrhotite, pn = pentlandite, cp = chalcopyrite, mt = magnetite, field of view on both images is 300 microns.

- **No "ore grade" mineralisation has been intersected. However, the presence of magmatic nickel and copper sulphides support the high prospectivity of the host ultramafic unit for nickel-copper sulphide mineralisation**
- **Widespread ultramafic and associated gabbro units with substantial content of pyrrhotite (some zones >5%) and locally minor nickel sulphide minerals were intersected in a total of 6 drill-holes**



Figure 2. Photograph showing strong disseminated pyrrhotite within gabbro ZRC084 181-183m.

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- **Important drill intercepts include;**
    - **ZRC086 12m** (from 92m down-hole) **of ultramafic rock with abundant magmatic blebs of composite pyrrhotite, pentlandite and chalcopyrite, then 14m of gabbro with ~0.5% pyrrhotite, then 7m of gabbro with ~2% pyrrhotite. 4m @ 1,219ppm Ni** (from 96m) **in ultramafic**
    - **ZRC088 12m** (from 76m) **of ultramafic rock with minor pyrrhotite and traces of nickel sulphide minerals pentlandite, heazlewoodite, nickeline and gersdorffite with additional traces of chalcopyrite. This is followed by 15m of gabbro with ~0.2% pyrrhotite. 12m @ 1,244 ppm Ni** (from 76m) **in ultramafic**
    - **ZRC078 52m** (from 120m) **of gabbro with disseminated pyrrhotite including 20m of ~5% pyrrhotite** (from 136m)
    - **ZRC080 104m** (from 28m) **of gabbro with ~0.1 to ~0.5% pyrrhotite and 16m** (from 140m) **of intermediate gneiss with ~2% pyrrhotite**
    - **ZRC084 15m** (from 166m) **of mixed gabbro and siliceous rocks with ~5% pyrrhotite**
    - **ZRC087 38m** (from 56m) **of gabbro with ~1% pyrrhotite, then 46m of more siliceous rocks with ~2% pyrrhotite, then 38m of gabbro with ~0.1 to ~0.5% pyrrhotite**
    - **ZRC076 8m** (from 99m) **@ 22.7% TGC inc. 3m @ 34.6% TGC. Coarse flake graphite within paragneisses**
- **Full technical assessment has commenced on all datasets - results of which will determine the future exploration plan.**

Summary of drill program observations

Buxton Resources Limited (ASX: BUX & BUXO) is very pleased to announce that the recently completed RC drilling program at the Zanthus Ni-Cu Project has confirmed the presence of ultramafic and mafic units. These include those in which that contain preserved magmatic nickel-copper sulphides.

The occurrence of definitively identified magmatic nickel sulphides is indicative of sulphide saturation occurring at an early magmatic stage, before substantial amounts of nickel sequestering silicates (olivine, pyroxenes) were able to crystallise. As such, the confirmed presence of these magmatic nickel-copper sulphides indicates excellent prospectivity for larger, potentially economic accumulations of nickel-copper sulphide mineralisation, for example along strike or at depth

Important observations from the drilling program include;

- Confirmed *magmatic* nickel-copper sulphides within ultramafic rock
- Thick intercepts of ultramafic to mafic (gabbro) rocks with weak to strongly disseminated sulphides (mainly pyrrhotite)
- Confirmation of the broad geology interpreted from previous magnetic, gravity and electromagnetic surveys

Overall, the geology of the project area is very complex. However, it has now been confirmed to contain large, gabbro-dominant, ovoid, mafic-ultramafic bodies that variably daylight and are locally capped by country rock paragneisses (derived from sedimentary parent rocks). Numerous thinner intercepts of gabbro that occur around the margins of the ovoid bodies and within paragneiss caps indicate a high density of associated smaller mafic-ultramafic bodies, possibly as dykes and/or sills.

Drilled ground EM conductors have been shown to be either;

- Gabbro-ultramafic with weak to strong disseminated sulphides, including magmatic nickel-copper sulphides. These are considered to be important indicators for possible nickel-copper sulphide mineralisation
- Paragneisses with weak to strong disseminated pyrrhotite and pyrite – not considered economically significant targets
- Graphitic gneisses – considered flake graphite targets
- Unexplained – drill holes have not reached target depth due to difficult ground conditions or have intersected rocks that do not explain the ground EM conductors

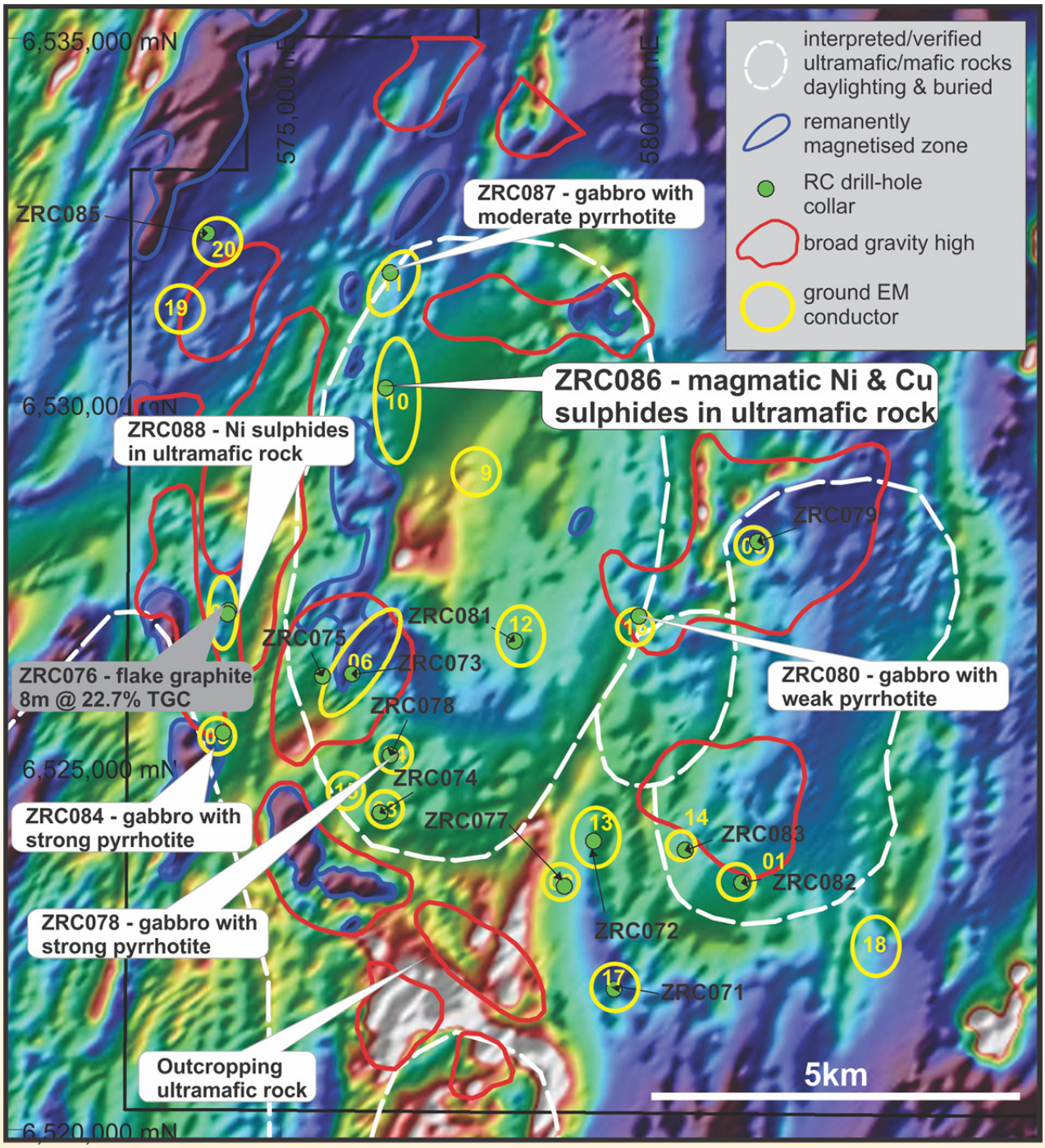

Figure 3. Location of 2014 RC drill-holes over airborne magnetics with gravity and EM features indicated.

High-Grade Flake Graphite

A number of RC drill holes at Zanthus intersected high-grade, visually coarse flake graphite mineralisation within paragneisses. Assays for two of these intercepts have been received to date;

- ZRC076 8m @ 22.7% TGC inc. 3m @ 34.6% TGC (from 99m)
- ZRC077 7m @ 6.5% TGC (from 95m)

Preliminary petrography shows very coarse graphite, in blocky crystals, in some cases over 1mm long and 250 microns wide. Average flake length is 400 microns, with widths of 100-200 microns, meaning the flakes are cleaner and blockier than most occurrences.

The Company is undertaking a technical assessment of the flake graphite occurrences including reconciliation with the modeled ground EM data to assist in planning any follow up exploration programs.

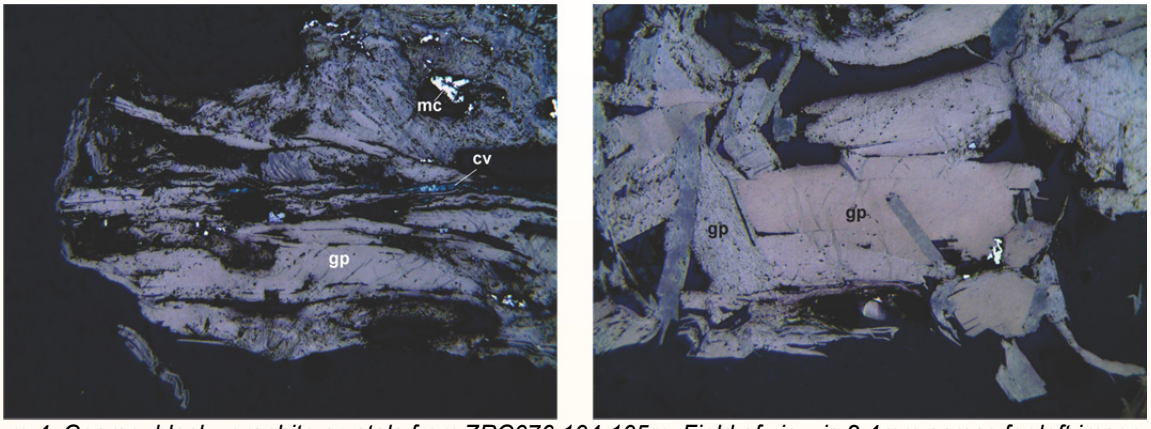

Figure 4. Coarse, blocky graphite crystals from ZRC076 104-105m. Field of view is 2.4mm across for left image and 1.2mm across for right image.

Overall Conclusion

The drilling program results, coupled with data from the previous geophysical and geochemical surveys at Zanthus show a very large, ultramafic-mafic system that is "live" and highly prospective for economic nickel-copper sulphide mineralisation. Important features of this system include;

- Located in Proterozoic orogen in close proximity to major, crustal scale shear zone and broadly along strike from world class Nova-Bollinger discovery
- Very large ultramafic-mafic system with significant geological complexity and numerous smaller dyke and/or sill-like bodies
- Sulphur-rich country rocks to potentially contribute to sulphur saturation of ultramafic-mafic rocks
- Ultramafic rock with petrographically verified, abundant magmatic blebs of composite pyrrhotite, pentlandite and chalcopyrite
- Numerous thick intercepts in drill-holes of ultramafic to mafic (gabbro) rocks with weak to strongly disseminated sulphides (mainly pyrrhotite)

The Company now has a large and detailed dataset including surface geochemistry, magnetics, gravity, EM, drilling and petrography. Immediately, the new drilling information requires a significant petrological and geochemical study which will then be integrated with the other datasets to produce a holistic model and future exploration plan.

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Competent Persons

The information in this report that relates to exploration results is based on information compiled and/or reviewed by Dr Julian Stephens, Member of the Australian Institute of Geoscientists and Non-Executive Director for Buxton Resources Limited. Dr Stephens has sufficient experience which is relevant 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 and consents to the inclusion in this report of the matters reviewed by him in the form and context in which they appear.

Table 1. 2014 Zanthus RC drilling collar table

Hole ID	Easting	Northing	Dip	Azimuth	EOH(m)
ZRC071	579537	6521966	60	270	63
ZRC072	579276	6523971	60	270	57
ZRC073	576001	6526252	60	280	123
ZRC074	576376	6524379	75	090	51
ZRC075	575614	6526237	60	280	93
ZRC076	574337	6527126	70	180	195
ZRC077	578866	6523369	85	270	130
ZRC078	576514	6525162	75	090	284
ZRC079	581526	6527999	60	270	45
ZRC080	579910	6527010	60	290	171
ZRC081	578221	6526677	75	270	108
ZRC082	581283	6523398	70	270	154
ZRC083	580516	6523849	75	090	142
ZRC084	574258	6525470	75	270	256
ZRC085	574083	6532227	90	000	130
ZRC086	576500	6530113	90	000	130
ZRC087	576571	6531675	65	280	178
ZRC088	574323	6527083	70	180	118

Table 2. List & brief description of geology and mineralisation in Zanthus RC drilling.

Hole ID	EM target ID	Hole depth (m)	Description
ZRC071	ZV17	63	Weak disseminated graphite and minor pyrrhotite & pyrite in paragneisses.
ZRC072	ZV13	57	Sand cover, then 5m of strongly graphitic clay (from 52-57m EOH). Graphite assays not yet received.
ZRC073	ZV06e	123	Weak disseminated graphite and minor pyrrhotite & pyrite in paragneisses.
ZRC074	ZV03	51	Sand cover, hole abandoned, target not reached.
ZRC075	ZV06w	93	Weak disseminated flake graphite over 9m (from 59m) within paragneisses.
ZRC076	**ZV07**	195	**Very high grade coarse flake graphite within paragneisses. 8m @ 22.7% TGC inc. 3m @ 34.6% TGC (from 99m).**
ZRC077	ZV02	130	High grade flake graphite within paragneisses. 7m @ 6.5% TGC (from 95m).
ZRC078	**ZV04**	284	**52m (from 120m) of gabbro with disseminated pyrrhotite including 20m of ~5% pyrrhotite (from 136m). Multiple additional 1-2m wide gabbro dykes with pyrrhotite within broader zones of paragneisses throughout remainder of the hole.**
ZRC079	ZV08	45	Weak disseminated graphite and minor pyrrhotite & pyrite in paragneisses.
ZRC080	**ZV16**	171	**104m (from 28m) of gabbro with ~0.1 to ~0.5% pyrrhotite and 16m (from 140m) of intermediate gneiss with ~2% pyrrhotite.**
ZRC081	ZV12	108	Moderate flake graphite 5m (from 51m) and 7m (from 65m) within paragneisses.
ZRC082	ZV01	154	Weak disseminated graphite 21m (from 29m) & 14m (from 63m), moderate graphite 3m (from 130m) & 5m (from 146m) within paragneisses.
ZRC083	ZV14	142	Paragneiss, 20m of ~1% pyrite+pyrrhotite (from 124m).
ZRC084	**ZV05**	256	**15m (from 166m) of mixed gabbro and siliceous rocks with ~5% pyrrhotite.**
ZRC085	ZV20	130	Paragneiss, 22m (from 108m) of ~1% disseminated pyrrhotite.
ZRC086	**ZV10**	130	**12m (from 92m) of ultramafic rock with abundant magmatic blebs of composite pyrrhotite, pentlandite and chalcopyrite, then 14m of gabbro with ~0.5% pyrrhotite, then 7m of gabbro with ~2% pyrrhotite. 4m @ 1,219ppm Ni and 114 ppm Cu (from 96m).**
ZRC087	**ZV11**	178	**38m (from 56m) of gabbro with ~1% pyrrhotite, then 46m of more siliceous rocks with ~2% pyrrhotite, then 38m of gabbro with ~0.1 to ~0.5% pyrrhotite.**
ZRC088	**ZV07**	118	**12m (from 76m) of ultramafic rock with minor pyrrhotite and traces of nickel sulphide minerals pentlandite, heazlewoodite, nickeline and gersdorffite with additional traces of chalcopyrite. This is followed by 15m of gabbro with ~0.2% pyrrhotite. No magmatic textures of the nickel sulphide minerals are observed in petrographic samples, however, it is possible that they represent hydrothermally altered and/or remobilised primary magmatic sulphides. 12m @ 1,244ppm Ni and 11 ppm Cu (from 76m).**

*True widths of all intercepts have not yet been determined. A cut-off grade of 1,000ppm Ni has been used to report Ni intercepts.

Appendix: JORC code tables and commentary

Section 1

Criteria	Drilling Commentary
Sampling Techniques	Reverse circulation drilling was employed to generate 1m samples.
Drilling Techniques	Drilling was conducted on ground EM/geochemical targets. A total of 2,428m of 5¾ inch RC drilling was completed in 18 holes over 17 targets.
Drill Sample Recovery	The RC bulk sample recovery was routinely examined for representivity. It is not believed that any bias has occurred due to loss or gain of sample.
Logging	100% of the drill holes were geologically logged by qualified and experienced geologists, recording relevant data to a set template to metre intervals. All logging included lithological features, mineral assemblages and estimated mineralisation percentages. All data was codified to a set company codes system. This offers sufficient detail for the purposes of interpretation and further studies.
Sub-sampling techniques and sample preparation	Nominally 4m composite spear samples were generated from the bulk RC samples. Duplicate samples were taken on average every 20th sample to provide checks on sample representivity. 1m riffle split samples were taken for areas of visually high grade graphite. Sample preparation is consistent with industry best practice. Field QC procedures involved the use of certified reference material assay standards, blanks and duplicates for company QC measures, and laboratory standards, replicate assaying and barren washes for laboratory QC measures. The insertion rate of each of these QAQC measures averaged better than 1:20. The sample size is deemed appropriate for the material and analysis method.
Quality of assay data and laboratory tests	The samples were analysed at Genalysis Intertek in Perth, Australia. Sample preparation included drying, crushing, splitting and pulverizing. A 4 acid digest followed by a 37 element ICP analysis was conducted on all 4m composite samples. 1m graphite splits were analysed using an ELTRA analyser to determine total graphitic carbon content (TGC). The laboratory procedures are considered to be appropriate for reporting according to industry best practice. Company QAQC samples were employed at 5-8% of total samples analysed. The results of the company-inserted and laboratory-inserted standards, blanks and sample repeats demonstrate the accuracy and precision of multi-element and TGC methods.
Verification of sampling & assaying	No twin holes were drilled. All data was collected initially on paper logging sheets, codified to the Company's templates. This data was hand entered to spread sheets and validated by Company geologists. This data was then imported to a Microsoft Access Database, and then validated using MapInfo software. No adjustments to assay data have been made.
Location of data points	All XYZ surveying was completed using a handheld GPS to MGA94 / Zone 51 South grid system, to an accuracy of approximately 5m. All down-hole surveying was carried out using a Reflex Ez-Trak multi-shot survey tool at nominal 30m intervals down hole. Topographical control is sufficient for this stage of exploration.
Data spacing & distribution	Drill spacing at this point of the exploration program is irregular, and designed to test ground EM conductors.
Orientation of data in relation to geological structure	The orientation of the drilling to geological structure or grain is difficult to determine accurately at this stage of exploration, and thus all intercept widths have unknown true widths.
Sample security	Samples were packaged and stored in secure storage from the time of gathering through to submission. Laboratory best practice methods were employed by the laboratory upon receipt.
Audits or reviews	No audits of the sampling techniques and data were carried out due to the early stage of exploration. It is considered by the Company that industry best practice methods have been employed at all stages of the exploration.

Section 2

Criteria	Drilling Commentary
Mineral tenement & land tenure status	Buxton Resources owns 100% interest in the E28/1959 (Zanthus) tenement.
	The tenement is in good standing and there are no known significant impediments to exploration or mining in the area.
Exploration done by other parties	No other parties were involved in this exploration program.
Geology	Overall, the geology of the project area is very complex. However, it has now been confirmed to contain large, gabbro-dominant, ovoid, mafic-ultramafic bodies that variably daylight and are locally capped by country rock paragneisses (derived from sedimentary parent rocks). Numerous thinner intercepts of gabbro that occur around the margins of the ovoid bodies and within paragneiss caps indicate a high density of associated smaller mafic-ultramafic bodies, possibly as dykes and/or sills.
Drill hole information	Refer to Table 1.
Data aggregation methods	No top cuts have been applied. Nominal 1,000ppm Ni and 5% TGC lower cut-offs have been applied in the determination of significant intercepts. High grade intercepts within broader low grade intervals have been separated as "including" results. No metal equivalent values are used in this report.
Relationship between mineralisation widths & intercept lengths	The orientation of the drilling to geological structure or grain is difficult to determine accurately at this stage of exploration, and thus all intercept widths have unknown true widths.
Diagrams	Refer Figures 1, 2 3 and 4.
Balanced reporting	Representative reporting of low and high grades has been effected within this report.
Other substantive exploration data	The Company now has a large and detailed dataset including surface geochemistry, magnetics, gravity, EM, drilling and petrography. Details of previous work are provided in previous ASX announcements.
Further work	Immediately, the new drilling information requires a significant petrological and geochemical study which will then be integrated with the other datasets to produce a holistic model and future exploration plan.