ASX Announcement **3 April 2024**

96-98% Lithium Recovery at Kuusisuo

Highlights:

- Preliminary testwork completed to assess the potential of magnetic separation of lithium-bearing minerals at Kuusisuo.
- Dry magnetic separation techniques have produced exceptional results of between **96-98% recovery of lithium in magnetic mineral concentrates** that are 45.7-50.5% of the original total mass.
- Results are highly encouraging and provide support for potential cost-effective processing solutions at Kuusisuo.
- Furthermore, these results provide further similarities to processing pathways reported at the Cinovec deposit in the Czech Republic.
- The Company is preparing an Exploration License application to enable preparation of future exploration work.

Great Northern Minerals Limited (**"GNM"** or the **"Company"**) (**ASX: GNM**) is pleased to advise highly encouraging magnetic separation testwork results recently completed at Kuusisuo, Finland.

GNM Managing Director, Cameron McLean said "*GNM is pleased with the results of the magnetic separation tests at Kuusisuo and the possible commercial outcomes that it represents. The Company is excited to continue exploration efforts at Kuusisuo and we look forward to lodging our Exploration Licence application which we expect to be granted in 2H 2024.*"

Figure 1: Dry magnetic separation on sample KUSGS37 showing magnetic concentrate on the left (black) and non-magnetic residual material on the right (light grey).

Work completed to date from petrography and mineralogy analysis (see GNM ASX announcement dated 21 February 2024) together with these new magnetic separation results is highly encouraging given the similarities shared with the giant Cinovec Lithium Project located in the Czech Republic, which is close to Financial Investment Decision (FID) following successful feasibility studies[1]. The Cinovec Project is anticipated to produce 29,386 tonnes per annum of lithium hydroxide over a 25 year mine life and due to its mineral makeup, has the potential to be the lowest cost hard rock project in the world[2]. The findings from this analysis warrant further work in order to fully evaluate further potential of Kuusisuo.

Kuusisuo Lithium Project Magnetic Separation Work

This work and analysis was conducted by Axray Scientific AB, an experienced Scandinavian consultant, engaged by GNM utilising equipment at the University of Gothenburg.

Sample Selection & Preparation

The previous stage of the mineralogy analysis determined that the lithium-bearing micas were falling within the zinnwaldite-protolithionite transition zone, with Li_2O concentrations of approximately 1.0–2.1 wt.% (see GNM ASX announcement dated 21 February 2024). Therefore, the Company decided to conduct its first phase of magnetic testwork to assess the amenability to low-cost processing.

The raw sample materials used for this study were returned coarse rejects with sufficient sample weight from mineralised samples submitted to the ALS laboratory from the July 2023 field sampling campaign. Samples selected were from rock samples KUSGS35, 37 and 38 (see GNM ASX announcement dated 2 November 2023; Table 1). The content of lithium and other metals within the selected samples are of a similar level to the giant lithium-rich greisen system at Cinovec in Czech Republic which has a JORC Resource of **708.2Mt at 4,300 ppm Li_2O, 500 ppm Sn and 200 ppm W**[3], which is the largest hard rock lithium deposit in Europe[2,3].

Table 1: Assays for rock samples from Kuusisuo. *Co-ordinate system is ETRS89 / TM35FIN (E,N)

SAMPLE	Easting	Northing	Li_2O_ppm	SnO_2_ppm	Rb_2O_ppm	WO_3_ppm	Cu_ppm	Ag_ppm	F_%
KUSGS35	466173	6790569	3182	1739	1651	168.8	1440	11	4.33
KUSGS37	466101	6790916	3075	71	1515	64.3	110	6	4.02
KUSGS38	466102	6790927	2430	79	1115	95.0	690	13	3.86

The crushed samples were dry sieved using 1-, 0.5-, 0.25-, and 0.125-mm sieve sizes, yielding five fractions of sieved crusher fines per sample. A qualitative ocular inspection of the mica mineral liberation was conducted with a binocular microscope. The >1 mm fraction contains large flakes of fully liberated mica but also composite grains with unliberated mica. Although the composite grains could likely be beneficiated by the magnetic separator, it would lead to a larger amount of gangue quartz in the magnetic concentrate. Further inspection of the fractions revealed that most micas occur as liberated grains in the 0.5–0.25 mm fraction, although there are still some unliberated micas. Thus, the 0.25–0.125 mm fraction, in which nearly all mica crystals occur as fully liberated grains, was chosen for magnetic separation (Figure 2).

Note: Selected samples in this announcement are intended to represent geochemistry and style of greisen-style mineralisation identified to date in specific areas at the Kuusisuo prospect and do not represent the overall grade of rocks across the entire prospect area. Please refer to Figure 3 and GNM ASX announcement dated 2 November 2023 for further context. Analysis of lithium and other metals on minerals reported in this announcement are intended to indicate similarities to other known deposit geology and do not represent the grade of rocks across the entire area since exploration efforts are ongoing on the project.

Figure 2. Microphotograph of sample KUSGS37 sieved fraction 0.25–0.125 mm. Nearly all black lithium mica crystals (L) are fully liberated.

Magnetic Separation

Dry magnetic separation was conducted using a bench-top Frantz isodynamic magnetic separator. The operating principle of the magnetic separator is that minerals are fed into the upper channel of a chute. By gravity and vibration, the minerals move down the chute underneath a strong electromagnet. A gap in the channel wall allows non-magnetic minerals to slide down to the lower channel while paramagnetic minerals are attracted by the strong magnetic field and remain in the upper channel. The channels dump the mineral grains into two separate containers, producing magnetic and non-magnetic mineral concentrates.

The machine has several parameters that can be adjusted, including the angle of the chute back to front and the strength of the electric field generated by the strong electromagnets. While quantitative optimisation of all the parameters is outside the scope of the current study, the parameters were adjusted incrementally, and produced mineral concentrates were evaluated under the binocular microscope until a suitable setting was found.

The following settings were used: 17° forward angle, 3° leftward angle, skew of the chute 3 mm up on the right and 2 mm down on the left. The electric current powering the electromagnets was set to 0.6 A. The chute vibration was set to low speed and feed vibration settings were adjusted to not overfeed the chute, which during the current experiment led to more non-magnetic minerals ending up in the magnetic concentrate since they were lifted by the surrounding magnetic minerals. The masses of the concentrates were measured on a scale with two decimal places and the relative amount of magnetic concentrate out of the total sample mass was calculated (Table 2).

Assay Results and Calculated Recoveries

The non-magnetic and magnetic concentrates were submitted to ALS Geochemistry for pulverising and chemical analysis by ICP-AES following sodium peroxide fusion of the pulp (ALS code ME-ICP89). The reporting interval for Li by this method is 0.001–10%. The non-magnetic concentrates were pulverised before the magnetic concentrates to minimise cross-contamination of the two sample types.

The assay results for Li (converted to Li_2O) are shown in Table 2. The Li_2O concentrations of the feed for each sample are calculated as the mass-weighted average of the relative proportions of non-magnetic and magnetic concentrates.

Table 2: Sample assay results and calculated lithium recovery

			ME-ICP89			Recovery
SAMPLE	**Mass**	**Mass**	**Li**	**Li2O**	**Li2O**	**Li2O**
DESCRIPTION	**grams**	**%**	**%**	**%**	**grams**	**%**
35 magnetic concentrate	45.42	0.50	0.29	0.61	0.28	**96.01**
37 magnetic concentrate	74.19	0.51	0.38	0.82	0.61	**97.48**
38 magnetic concentrate	63.11	0.46	0.35	0.75	0.48	**98.00**
35 non-magnetic residual	44.87	0.50	0.01	0.03	0.01	**3.99**
37 non-magnetic residual	72.71	0.49	0.01	0.02	0.02	**2.52**
38 non-magnetic residual	74.95	0.54	0.01	0.01	0.01	**2.00**

Discussion of Results & Recommendations for Further Work

The results of dry magnetic separation of rock sample material were highly encouraging and proved successful in beneficiating the lithium-bearing micas into a magnetic concentrate. Prior to optimisation the experimental setup achieved a recovery of 96–98% Li2O in 45.7–50.5% of the mass, producing a product concentrate with 0.613–0.816 wt.% Li_2O. The average Li_2O concentration of Li-bearing micas, previously determined by LA-ICP-MS, is approximately 1.54 wt.%. This indicates that the produced magnetic concentrates consist of 40–50 wt.% of the lithium-bearing mica warranting further testwork at the appropriate time in order to produce a higher grade concentrate.

This work confirms striking similarities to the giant lithium-rich greisen system at Cinovec in Czech Republic with a JORC resource of 708.2Mt at 4,300 ppm Li_2O, 500 ppm Sn and 200 ppm W[3] which is the largest hard rock lithium deposit in Europe. Cinovec has achieved >95% lithium recovery through flotation testwork, and is on track for Definitive Feasibility Study completion in Q1 2024[4,5].

Recent geochemistry work by GNM at Kuusisuo represents a large-scale lithium-enriched greisen system that extends for at least 1.3km at surface and is open in all directions particularly to the south near Kontimaki where at least 2 untested drill targets have been defined (See ASX GNM announcement dated 2 November 2023; Figure 3).

This work strongly supports the potential for a concealed “cupola” bulk-tonnage lithium deposit in the area so further work is warranted. Planned work programs comprise an extension of the rock and biogeochemistry programs, reprocessing geophysics, an orientation IP survey, and submission of an exploration license application in preparation for a drill program.

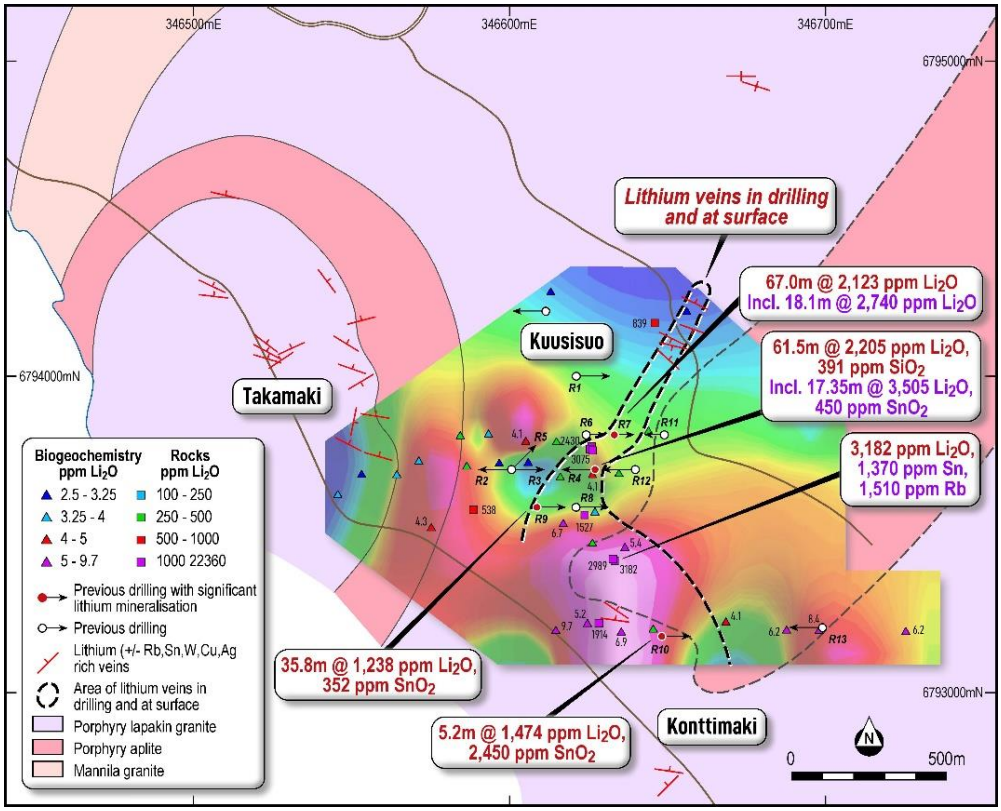

Figure 3: Interpreted Bedrock geology (Eden, 1991) showing gridded biogeochemistry lithium results and highlights of the new rock samples and previous drilling (see GNM ASX announcement dated 2 November 2023).

References

[1]European Metals Holdings Limited (ASX:EMH) Announcement 19 January 2022. PFS Update Delivers Outstanding Results. https://www.investi.com.au/api/announcements/emh/7381a65f-d0b.pdf.

[2]European Metals Holdings Limited (ASX:EMH) Announcement 6 April 2023. Investor Presentation. https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02652402-6A1144366.

[3]European Metals Holdings Limited (ASX:EMH) Announcement 13 October 2021. Resource Upgrade at Cinovec Lithium Project. https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02435111-6A1055696.

[4]European Metals Holdings Limited (ASX:EMH) Announcement 25 May 2023. Testwork Realises Continued Outstanding Lithium Recoveries. https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02669316-6A1151539.

[5]European Metals Holdings Limited (ASX:EMH) Announcement 22 December 2023. Cinovec Definitive Feasibility Study to be Completed Q1 2024. https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02757501-6A1187827.

Competent Person Statement

The information in this report that relates to new Exploration Results is based on information and data compiled or reviewed by Mr Leo Horn. Mr Horn is a consultant for the Company. Mr Horn is a Member of the Australasian Institute of Geologists (AIG).

Mr Horn has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activities undertaken to qualify as a Competent Person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Accordingly, Mr Horn consents to the inclusion of the matters based on the information compiled by him, in the form and context it appears.

The Company confirms that it is not aware of any new information or data that materially affects the information in the relevant ASX releases. The form and context of the announcement have not materially changed.

*****ENDS*****

This announcement has been authorised by the Board of Great Northern Minerals Limited.

For more information please contact:

Cameron McLean
Managing Director
Great Northern Minerals
+61 8 6214 0148
info@greatnorthernminerals.com.au

About Great Northern Minerals Limited

Great Northern Minerals Limited is an ASX-listed mineral explorer and developer with projects in Australia and Finland.

The Company's Golden Ant Project is located in Far North Queensland and includes the Amanda Bell Goldfield. Total gold production from the Amanda Bell Goldfield was approximately 95,000 oz Au (57,000 oz from Camel Creek and 14,000 oz from Camel Creek satellite deposits plus 18,000 oz from Golden Cup and 6,000 oz from Golden Cup satellite deposits). Two heap leach gold mines were operated (Camel Creek & Golden Cup). Mining activities commenced in 1989 and ceased in 1998 with the depletion of oxide gold mineralisation. Great Northern Minerals has entered into a Heads of Agreement for majority sale of Golden Ant Mining Pty Ltd, the owner of the Camel Creek and Golden Cup projects.

GNM also has also acquired two highly prospective lithium projects at Sukula and Kuusisuo in southern Finland covering an area of 536.3km^2. The Sukula project area comprises the northern portion of the well-known Somero LCT pegmatite field with one of the highest densities of mapped rare metal pegmatites in Finland. The Kuusisuo project is a large 362 km^2 tenure located 163km northeast of Helsinki which consists of the historical Kuusisuo lithium occurrence located central to a very large Mesoproterozoic aged Rapakivi granite intrusive complex.

JORC Code, 2012 Edition

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.* • *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.*	• Magnetic separation testwork was performed on coarse reject material from selected rock samples as described and outlined in GNM ASX announcement dated 2 November 2023. • Coarse reject samples were dry sieved using 1-, 0.5-, 0.25-, and 0.125-mm sieve sizes, yielding five fractions of sieved crusher fines per sample using metal sediment sieves. • Sieved samples were subject to dry magnetic separation extraction techniques conducted using a bench-top Frantz Isodynamic magnetic separator at the University of Gothenburg.
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).*	• No drilling results are reported in this announcement.
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.*	• No drilling results are reported in this announcement.

Criteria	JORC Code Explanation	Commentary
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.*	• Rock logging detailed in JORC Tables for GNM ASX announcement dated 2 November 2023.
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 sub-sampling stages to maximise representivity of 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.*	• Rock sub-sampling detailed in JORC Tables for GNM ASX announcement dated 2 November 2023.
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.*	• Original rock assays detailed in JORC Tables for GNM ASX announcement dated 2 November 2023. • Rock assays on magnetic and non-magnetic concentrate samples were sent to ALS Laboratories in Sweden and assayed for 17 selected multi-elements by Fusion ME-MS89 including lithium.
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.*	• No additional verification or testing as completed during this evaluation • Oxide conversions calculated for some metals (see Data Aggregation Methods section).

Criteria	JORC Code Explanation	Commentary
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.*	• Location data for rock assays detailed in JORC Tables for GNM ASX announcement dated 2 November 2023.
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.*	• The data is not appropriate for use in estimating a Mineral Resource and is not intended for such use. There has been insufficient exploration to define a Mineral Resource and it is uncertain if further exploration will result in the determination of a Mineral Resource. • Rock sampling details in JORC Tables for GNM ASX announcement dated 2 November 2023. • Magnetic separation testwork and estimated recoveries was conducted on the 0.25–0.125 mm sieved size fraction only for each sample. Recoveries on the coarser size fractions is as yet unknown but expected to be less. Further test work is required to assess the recoveries of various fractions sizes of material. This testwork was intended as a proof of concept and is considered appropriate as a first pass result on samples of an exploration project.
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 rock samples were selected as representative examples of lithium mineralisation observed at surface to date at Kuusisuo and not intended to represent the overall grade of lithium mineralisation across the project.
Sample security	• *The measures taken to ensure sample security.*	• Rock sample security has been adequately maintained by GNM.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No audits or reviews have been completed.

Section 2 JORC Code, 2012 Edition - Reporting of Exploration Results

<table>
<tr><th>Criteria</th><th>JORC Code Explanation</th><th>Commentary</th></tr>
<tr><td>Mineral tenement and land tenure status</td><td>• 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.</td><td>• Finland Reservation VA2023:0010-01 (Kuusisuo VA2023:0010) is currently held by Stedle Exploration AB. Great Northern Minerals have acquired 100% ownership of Stedle Exploration AB which holds the tenure.
• Small area of Natura 2000 national park occurs on the tenure. Non-ground disturbing exploration activities are permitted in these areas. Ground disturbing exploration activities are permitted in these areas with approvals.</td></tr>
<tr><td>Exploration done by other parties</td><td>• Acknowledgment and appraisal of exploration by other parties.</td><td>• The majority of previous information reported on this project was completed by Rautaruukki Oy in 1985 at Kuusisuo and reported in GNM ASX announcement dated 26 April 2023.</td></tr>
<tr><td>Geology</td><td>• Deposit type, geological setting and style of mineralisation.</td><td>• Lithium-tin granite greisen style mineralisation is interpreted to be very similar to the giant Cinovec deposit in Czech Republic.</td></tr>
<tr><td>Data aggregation methods</td><td>• In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. 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.</td><td>• Metal oxides are an industry accepted form for reporting of mineral probe assay results. The conversion factors are shown below:
<table>
<tr><th>Element</th><th>Oxide</th><th>Factor</th></tr>
<tr><td>Iron</td><td>FeO</td><td>1.2865</td></tr>
<tr><td>Lithium</td><td>Li2O</td><td>2.1527</td></tr>
<tr><td>Rubidium</td><td>Rb2O</td><td>1.0936</td></tr>
<tr><td>Tin</td><td>SnO2</td><td>1.2696</td></tr>
<tr><td>Tungsten</td><td>WO3</td><td>1.261</td></tr>
</table></td></tr>
<tr><td>Sub-sampling techniques and sample preparation</td><td>• The assumptions used for any reporting of metal equivalent values should be clearly stated.</td><td>• No metal equivalents are reported in this announcement.</td></tr>
<tr><td>Relationship between mineralisation widths and intercept lengths</td><td>• 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</td><td>• No drilling results reported in this announcement.</td></tr>
</table>

Criteria	JORC Code Explanation	Commentary
	should be a clear statement to this effect (e.g. 'down hole length, true width not known').	
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.*	• Appropriate maps, sections and tables are included in this 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.*	• All available data has been reported in tables and figures.
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.*	• Everything meaningful and material is disclosed in the body of the report. • Exploration data for the project continues to be reviewed and assessed and new information will be reported if material.
Further work	• *The nature and scale of planned further work (e.g. 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.*	• Further work is detailed in the body of this ASX announcement.