

5 December 2018

**ASX: GAL** 

## **Corporate Directory**

#### **Directors**

Non-Executive Chairman Simon Jenkins

Managing Director Brad Underwood

**Technical Director** Noel O'Brien

### **Fast Facts**

 Issued Capital
 120.4m

 Share Price
 \$0.185

 Market Cap
 \$22.3m

 Cash (30/09/18)
 \$10.1m

#### **Projects**

Norseman Cobalt Project Fraser Range Nickel Project



#### **Contact Details**

T: +61 8 9463 0063 E: <u>info@galmining.com.au</u> W: <u>www.galileomining.com.au</u>

# ADDENDUM TO ANNOUNCEMENT RELEASED 4 DECEMBER 2018

**Galileo Mining Ltd** (ASX: GAL, "Galileo" or the "Company") wishes to advise that for completeness, the JORC Table 1 for the metallurgical test work drill results referred to in the Company's announcement titled "Outstanding Cobalt Extraction Results from Norseman" released on 4 December 2018 is attached at Appendix A. This information should be read in conjunction with the aforementioned announcement.



## Galileo Mining Ltd - Norseman Cobalt Project JORC Code, 2012 Edition - Table 1 Report

Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul> <li>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul> <li>Metallurgical samples were obtained from HQ3 "triple tube" diamond core drilling</li> <li>Each HQ3 diamond core sample interval was initially sampled on a 1m maximum interval basis as a continuous channel sample along the length of each interval to achieve a continuous representative channel sample of ~10% of the total core by volume in each interval (see ASX announcement dated 13th August 2018)</li> <li>Remaining drill core was retained in core trays prior to selection of intervals for metallurgical test work</li> <li>Bulk samples of whole core (minus the ~10% of the sample used in the initial assays) over continuous intervals were sent to Nagrom in Perth. Composite weights varied between 15.1kg and 49.3kg.</li> <li>QAQC standards and duplicate samples were routinely included with 1 per 20 samples being a standard or duplicate</li> <li>Samples were sent to an independent commercial assay laboratory</li> <li>All assay sample preparation comprised oven drying, jaw crushing, pulverising and splitting to a representative assay charge pulp</li> <li>A fire assay was used for Au, Pt and Pd analyses (by ICP-MS)</li> <li>A four acid digest was used for a multielement suite including Ag, Al, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cs, Cu, Fe, Ga, Ge, Hf, In, K, 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, Zr (by ICP-MS or ICP-OES)</li> </ul>
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-	HQ3 "triple tube" (61.1mm diameter) diamond core drilling was undertaken by Terra Drilling Pty Ltd.



Criteria	JORC Code explanation	Commentary
	sampling bit or other type, whether core is oriented and if so, by what method, etc).	
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>	<ul> <li>HQ3 diamond core drilling recoveries were estimated for each interval by logging the length of the sample recovered</li> <li>Core recovery was high at above 95% over the mineralised zone</li> <li>No relationship has been determined between sample recoveries and grade and there is insufficient data to determine if there is a sample bias</li> </ul>
Logging	<ul> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul> <li>Geological logging of drillholes included lithology, grainsize, mineralogy, colour and weathering</li> <li>Logging of sonic and diamond drill core is qualitative and based on the insitu presentation of the core sample</li> <li>All drillholes were logged in their entirety</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all subsampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>Diamond drill core whole samples (minus the ~10% of the sample used in the initial assays – see paragraph above) were used to create composite samples at Nagrom</li> <li>Composite samples at Nagrom were stage crushed, subject to an RSD blend and then split</li> <li>A sub-sample of the composite was taken to establish a head grade of the composite prior to concentration test work</li> <li>Coarse grained and fine-grained products of the test work were dried, split and analysed</li> <li>Composite 3 from drill hole GDH003 was selected for metallurgical leach test work as it best represented the ore body and was also the largest composite sample at 49.3kg</li> <li>Composite 3 was from HQ diamond core hole GDH003 and was used for the creation of the master composite with the interval selected being between 31m and 42m downhole (see ASX announcement dated 13th August 2018 for drillhole location details)</li> <li>Wet screening of composite 3 utilising a commercial Kason wet screen was used to separate the + 38 micron fraction of the composite</li> <li>The final master composite totalled</li> </ul>



Criteria	JORC Code explanation	Commentary
		<ul> <li>25.4kg after initial sampling and concentrating at the +38 micron level</li> <li>A 5kg subsample of the master composite was sent to ALS Metallurgy in Perth for leach test work</li> <li>All subsampling of the master composite was completed at Nagrom Laboratory using either a rotary sampling device or a laboratory riffle splitter</li> <li>500g charges were prepared by ALS from the 5kg subsample by rotary splitting. One 500g charge was used for sizing, head grade and grind establishment test work to determine the required milling time necessary to achieve P<sub>100</sub> &lt; 106 microns. The remaining 500g charges were then milled to a P<sub>100</sub> &lt;106 microns prior for use in the leach test work.</li> <li>500g of solids were used in each leach test performed by ALS</li> <li>Sample sizes for the composite head grade, coarse product, fine product and ALS subsample are appropriate for the level of test work being undertaken</li> </ul>
Quality of assay data and laboratory tests	<ul> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</li> </ul>	<ul> <li>Core samples were analysed for Au, Pt, Pd by 50 g fire assay with an ICP-MS finish and for a multi-element suite by ICP-MS or ICP-OES following a four-acid digest. The assay methods used are considered appropriate</li> <li>QAQC standards and duplicates were routinely included at a rate of 1 per 20 samples</li> <li>Further internal laboratory QAQC procedures included internal batch standards and blanks</li> <li>Original diamond drill core samples were analysed by Intertek Genalyis Laboratory Services (Perth) using 50g fire assay for Au, Pt, Pd (FA50/MS) and by four acid (4A/OM10) for multi-element</li> <li>Metallurgical concentration test work and laboratory analyses were performed by Nagrom Metallurgical in Perth</li> <li>Laboratory analyses by Nagrom utilised a 50g fire assay for Au, Pt, Pd and a four acid digest for multi-element</li> <li>Internal Nagrom laboratory QAQC included a minimum of 1 CRD</li> </ul>



Criteria	JORC Code explanation	Commentary
		standard and 1 replicate assay per 20 samples. For each batch a minimum of 2 CRM standards were used to account for any variability  • Leach test work was completed at ALS in a suitably sized baffled leach reactor with overhead stirrer, using sparged SO <sub>2</sub> addition and with sulphuric acid added at time t = 0  • ALS is ISO 9001 accredited  • Analyses of the leached solids were performed by ALS Metallurgy using a fused bead XRF. Controls were included at a minimum of one in ten samples. Multiple internationally Certified Reference Materials (CRMs) were used with every job submitted with standards selected to ensure all elements and element ranges were covered.  • Analyses of leached liquors were performed by ALS Metallurgy using a dual view ICPOES. The liquors were run with an internal standard to correct for any instrument drift effects. Multiple independent liquor standards were run throughout to match all analyte levels. Classical work was done using independently standardised reagents.
Verification of sampling and assaying	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul> <li>Field data was collected on site using a standard set of logging templates entered directly into a laptop. Data was then sent to the Galileo database manager for validation and upload into the database</li> <li>Assays have not been adjusted in any way</li> </ul>
Location of data points	<ul> <li>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.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul> <li>Drillhole collars are surveyed with a handheld GPS with an accuracy of 5m which is considered sufficient for drillhole location accuracy</li> <li>Co-ordinates are in MGA94 datum, zone 51</li> <li>Topographic control has an accuracy of 2m based on detailed satellite imagery</li> </ul>
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> </ul>	Drill hole spacing for the diamond drill holes was not grid based. The drill holes were designed to acquire metallurgical samples from mineralisation identified in previous drilling and from within the bounds of JORC mineral resource estimation.



Criteria	JORC Code explanation	Commentary
	Whether sample compositing has been applied.	
Orientation of data in relation to geological structure	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	It is unknown whether the orientation of sampling achieves unbiased sampling of possible structures as the mineralisation is hosted in soft regolith material with no measurable structures recorded in drill core
Sample security	The measures taken to ensure sample security.	<ul> <li>Each sample was put into large sealed plastic bag and then into a second plastic bag to ensure no loss of material</li> <li>Diamond drilling samples were placed into large sealed bags and then into a second bag to ensure no loss of material</li> <li>Diamond drilling samples were delivered to Kalgoorlie by Galileo's freight contractor and then from Kalgoorlie to Nagrom in Perth by another Galileo freight contractor</li> <li>The ALS subsample was couriered from Nagrom Laboratory in Perth to ALS Metallurgy laboratory in Perth</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	Continuous improvement reviews of sampling techniques and procedures are ongoing. No external audits have been performed

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	<ul> <li>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.</li> <li>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.</li> </ul>	<ul> <li>The Norseman Cobalt Project comprises two granted exploration licenses and twelve granted prospecting license covering 270km², and 9 prospecting license applications covering 11 km²</li> <li>All tenements within the Norseman Cobalt Project are 100% owned by Galileo</li> <li>The Norseman Cobalt Project is centred around a location approximately 10km west of Norseman on vacant crown land</li> <li>All tenements in the Norseman cobalt Project are 100% covered by the Ngadju Native Title Determined Claim.</li> <li>The tenements are in good standing</li> </ul>



Criteria	JORC Code explanation	Commentary
		and there are no known impediments.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	• NA
Geology	Deposit type, geological setting and style of mineralisation.	The target geology is supergene cobalt-nickel mineralisation occurring within a highly weathered regolith environment
Drill hole Information	<ul> <li>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:         <ul> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>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.</li> </ul>	Refer to drillhole collar table in ASX announcement dated 13 <sup>th</sup> August 2018
Data aggregation methods	<ul> <li>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.</li> <li>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.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul> <li>Announcement relates to metallurgical work</li> <li>For details of diamond drilling results please see Galileo ASX announcement dated 13th August 2018</li> <li>Galileo confirms that all material assumptions and technical parameters underpinning these results continue to apply and have not materially changed</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>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').</li> </ul>	<ul> <li>The mineralisation occurs in highly weathered regolith material and no structures have been recorded from drill core</li> <li>Given the nature of mineralisation it is thought that the geometry is best described as horizontal or subhorizontal however no quantitative measurements exist and all drill intercepts are reported as down hole length, true width unknown</li> </ul>
Diagrams	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported	Metallurgical hole location plan has been included as Figure 1 of ASX announcement dated 13 <sup>th</sup> August 2018



Criteria	JORC Code explanation	Commentary
	These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	"High Grade Cobalt in Shallow Drilling at Norseman."
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 significant results are reported
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.	Results have been reported without interpretation
Further work	<ul> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	Further metallurgical test work is warranted to optimise and improve the reported results and methodology used.