

# ASX Announcement 25 January 2018

# **Argentinean Project Update**

Dark Horse Resources Limited (ASX:DHR; "DHR", "Dark Horse" or "Company") is pleased to update the market on the status of the Company's project and business activities in Argentina.

# Highlights:

- ➢ Final batch of rock chip and mine waste-dump assay results received from the Las Tapias mapping program of November-December 2017. New waste dump samples returned results of up to 2.58% LiO2.
- > Following significant Lithium results from the surface of the Las Tapias mine waste dumps, a trenching program has commenced to test the Lithium content vertically through the dumps, where less leaching is expected.
- > Drilling permit application for the Las Tapias Mine program on track for issuance from the Cordoba province mining department in February-March 2018.
- Continuation of reconnaissance exploration activities of the Pampa Litio Lithium properties in San Luis province commencing at the El Totoral/San Luis Mine lease.
- ➤ Results of the trial High Resolution Resistive Electrical Tomography and Continuous Magnetic Survey programs at Las Tapias Mine, which was carried out during December 2017, are expected to be reported in February 2018.
- > Detailed geological mapping and soil sampling is well underway at the Los Domos Gold project in Santa Cruz province.
- > The Company continues to review, and have had offered to it, additional project opportunities in Argentina. The Company will update the market should any such additional projects be secured.

# PAMPA LITIO LITHIUM PROJECTS

Dark Horse has access to a large portfolio of mineral exploration ground under lease in Argentina through its progressive acquisition arrangement with Argentinean company Pampa Litio SA. Pampa Litio holds four (4) separate granted exploration licences in the San Luis province (Leon Herido, San Martin, Novillo Negro and El Totoral) totalling 34,000ha, and a group of five (5) mining licences and one (1) exploration licence over the Las Tapias Mine (300ha) in Cordoba province (refer **Figures 1 and 2**). Currently the San Luis Provincial Government is delaying processing of new applications, giving Dark Horse a competitive advantage.



# **Las Tapias Assay Results**

Some additional assay results (52 samples) have been received from the Las Tapias program carried out during November-December 2017. These samples were taken after the main original sample set, which consisted of 142 samples (the results of which were released in December), to complete the coverage over the mapped area. They include 21 representative rock chips samples (pegmatite and pegmatite dykes) and 31 surface, radial waste dump samples. The most significant results include:

- 1. A-1154; **0.54% Li2O** old workings located around 310m SW of the underground workings, on a pegmatite dike, indicating the possibility the spodumene body can be enlarged considerably in this direction.
- 2. A-1160; **2.58% Li20** waste dump (at surface).
- 3. A-1163; **0.84% Li20** waste dump (at surface).
- 4. A-1169; **1.62% Li20** waste dump (at surface).
- 5. A-1190; **0.53% Li20** waste dump (at surface).

**Figure 3** shows the location of the original and new waste dump sample sets.

The samples were sent to the ALS Mendoza laboratory for sample preparation, followed by analysis at the ALS Perth laboratory using Multi-Element Analysis by Sodium Peroxide Fusion and ICP-MS and Li Analysis by Sodium Peroxide Fusion and ICP-ES.

The 52 additional assay results are included as Annexure A. These results were broadly in line with the Company's expectations and again confirm that shallow surface leaching has likely affected the Lithium content. Hence, the next phase of work will be sample trenching as outlined below.

# Las Tapias Mine Waste Dump Trenching

Mapping carried out during the November-December 2017 program determined there is potential for up to 2 million tonnes of mine waste dump material at the Las Tapias Mine. Assay results from surface sampling of the dumps has proved there is significant grades of Lithium in some of these dumps (up to 2.58 LiO2%). Therefore, a follow-up trenching program has been implemented to test the Lithium content vertically through the dumps, where less leaching is expected. The program is underway, and further results are expected to be available in February 2018.

These waste dumps are easily accessible and could be mined in a straight forward open-cut manner utilising small excavators and trucks. Processing of the material to produce a saleable product is yet to be considered. Dark Horse is planning to carry out a preliminary feasibility and economical evaluation and model on the potential Lithium product contained within the Las Tapias waste dumps.

# **Las Tapias Drilling Program**

The Las Tapias drilling permit application is expected to be issued during February or March 2018, which will allow the commencement of the first stage resource definition drilling program. Twenty-five holes for a total of 3,000 metres are planned, with most holes expected to be 100 to 150 metres deep. Some deeper holes will be drilled to fully test the depth extension of the pegmatite. A drilling contract is being finalised with Conosur Mining Services in conjunction with Energold Argentina. The



field work is expected to be completed within two to three months with assaying, evaluation and reporting a further two to three months.

It is anticipated that the results of this initial drilling will move the project towards the estimation of a maiden Indicated and Inferred JORC Resource. Subsequent follow up resource definition drilling would follow to further upgrade the resource.

# Pampa Litio Lease Exploration

The reconnaissance exploration activities of the Pampa Litio Lithium properties in San Luis provinces are progressing well. The initial work has concentrated on the El Totoral lease, where the objectives are to systematically map and sample the pegmatites. The northern part of this pegmatite includes the historic workings of the San Luis Mine, where principally Beryl and Spodumene were extracted over a number of years.

The Company is waiting for the final approval of the El Totoral lease environmental permit (EIS) from the San Luis Province mining authorities. As a result of this, a small team of geologists is carrying out low impact field reconnaissance of the area. These activities will be expanded once the permit has been issued. For clarification, the San Luis Mining Department has not been fully operative since August 2017, though rectification is expected imminently. The EIS has satisfactorily passed all the required steps in the approval process, and is simply waiting an official sign off to conclude.

Dark Horse is carrying out its activities in a responsible manner under these conditions, without any environmental impact. The current field campaign has involved mapping the El Totoral pegmatites located in the southwestern part of the license, and tracing parallel East-West geological sections across them, in order to define the lithology, structure and pegmatite bodies disposition, including zonation. Representative rock chip samples have been collected and will be sent to the ALS laboratory in Mendoza for initial preparation prior to analysis in Australia. The current work has identified a plethora of pegmatites, as had been indicated in the prior remote sensing and photogeological study, which are shown in green in **Figure 4**. Several additional historic mines were located during the mapping and include Cargil, Diana and La Nilda. **Photos** of field activities are included below.

The geological team is also working in the northern, Paso del Rey part of the property, where significant pegmatites have also been located from previous remote sensing work.

This mapping program will be enlarged to include the other Pampa Litio San Luis Exploration Licences (all granted) of San Martin, Novillo Negro and Leon Herido. The Pampa Litio licence portfolio totals 34,000ha (refer **Figure 2**).

# **Las Tapias Geophysics Trials**

Results of the trial High Resolution Resistive Electrical Tomography and Continuous Magnetic Survey programs, which was carried out at Las Tapias Mine during December 2017, are being evaluated with the geology, and are expected to be reported to the market in February 2018.

### LOS DOMOS GOLD PROJECT

Detailed geological mapping and lag sampling has commenced at the Los Domos Gold project in Santa Cruz province (refer **Figure 1**). Lag samples are similar to soil samples except, because the surface material is relatively course, the term applied is "lag". A total of 20 samples has been obtained to date and will be sent to the ALS laboratory in Mendoza for analysis.



The geological team has also commenced detailed geological mapping at a scale of 1:5,000 and is differentiating lithological units, structure and mineralization. Dark Horse plans to continue this mapping and sampling program through until April 2018 to cover the complete Los Domos project area. Geophysical surveys of IP and Resistivity over the most important targets are planned to follow this mapping work.

Several **Photos** of the field activities are included below.

#### **NEW PROJECT DEVELOPMENT**

The Company continues to review, and has had offered to it, additional project opportunities in Argentina and South America. The Company will update the market should any such additional projects be secured.

#### **FUTURE WORK AND MILESTONES**

Dark Horse has developed comprehensive exploration programs for its full suite of licences in San Luis and Cordoba provinces, in particular the primary targets of Las Tapias and El Totoral/San Luis Mine. It has engaged a professional team of geoscientists, is well funded, and is moving systematically and prudently down the path to meet its objectives. The current expected milestones for the next few months are:

# **February**

- Reporting of the trial High Resolution Resistive Electrical Tomography and Continuous Magnetic Survey programs at Las Tapias Mine.
- Reporting of initial geological mapping results of El Totoral/San Luis Mine Lithium pegmatite and Los Domos Gold projects.
- ➤ Report initial lag sample assay results from the Los Domos Gold project.

#### March

- > Secure environmental permits for drilling at Las Tapias, and for detailed exploration over the full suite of the San Luis Lithium leases.
- Prepare drill pads and mobilise drilling rig to Las Tapias.
- Report initial assay results from the El Totoral/San Luis Mine Lithium pegmatite project.
- > Reporting of initial geological mapping results of San Martin Lithium pegmatite lease.

# <u>April</u>

Report initial drilling results for Las Tapias project.



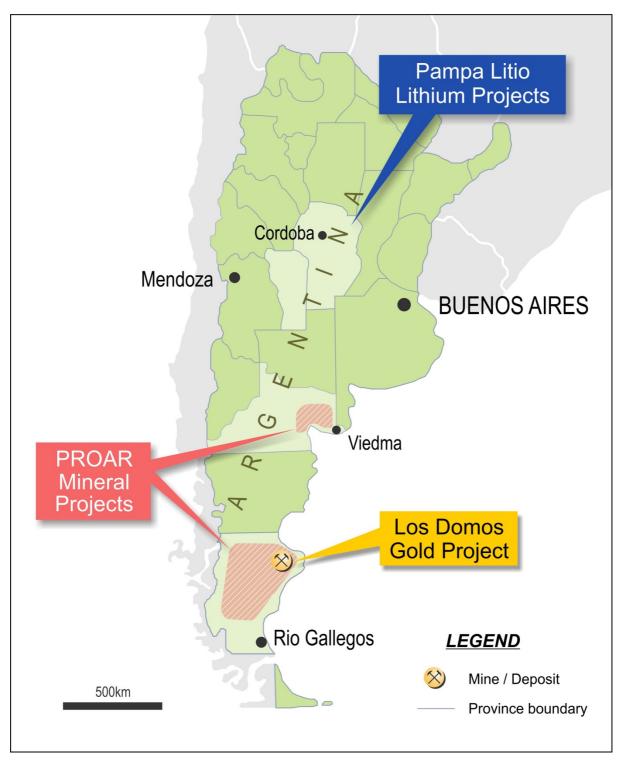


Figure 1 – Location of Dark Horse's mineral projects in Argentina.



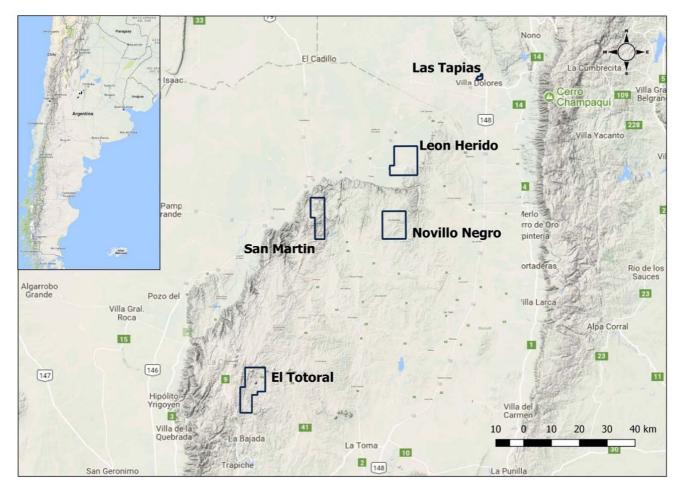


Figure 2 – The Pampa Litio suite of leases in San Luis province and Las Tapias in Cordoba province.



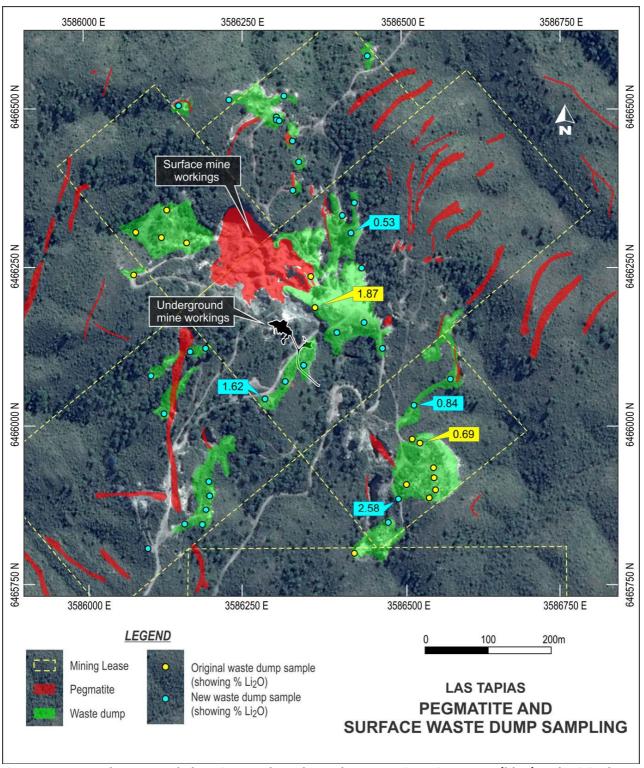


Figure 3 – Waste dump sample locations and results at the Las Tapias Mine – new (blue) and original (yellow) with significant LiO2% marked



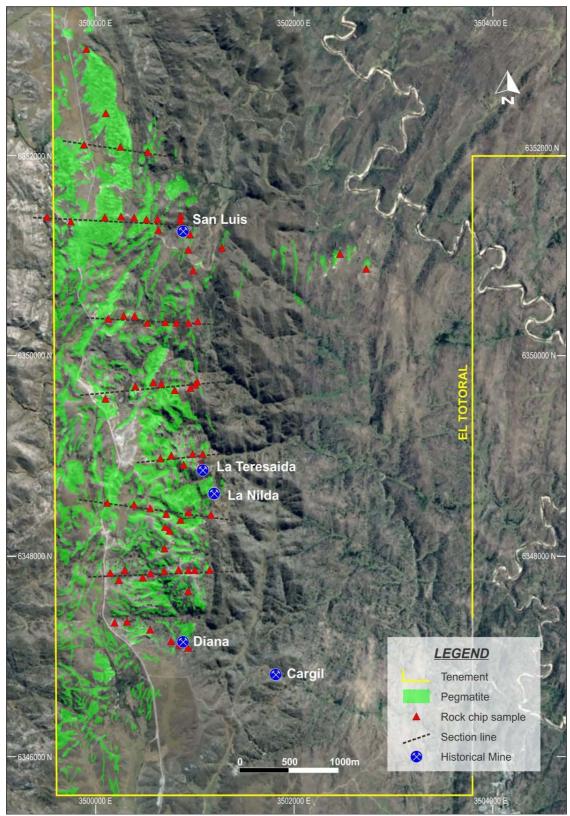


Figure 4 – Pegmatite bodies mapped in the El Totoral lease (green) in the San Luis province. East-west section traces mapped to date with sample points (red).



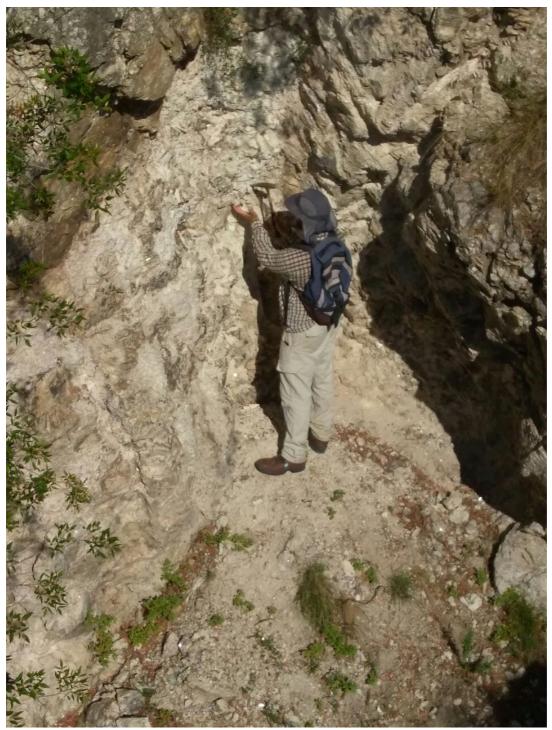


Photo 1 – Spodumene rich pegmatite outcrop being mapped in the El Totoral lease.





Photo 2 – Pegmatite outcrop being mapped in the El Totoral lease.



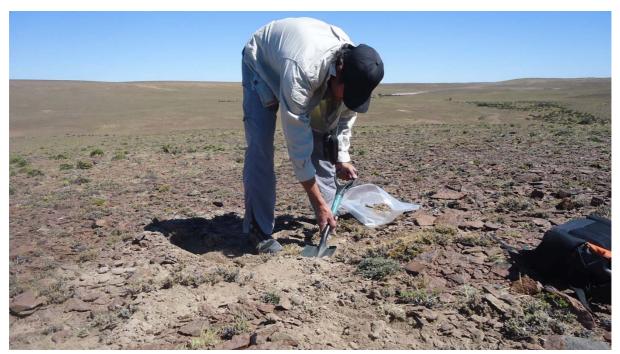


Photo 3 – Geologist taking lag samples at the Los Domos Gold lease in Santa Cruz province.



Photo 4 – Geologist carrying out detailed geological mapping at the Los Domos Gold lease in Santa Cruz province.





On behalf of the Board Mr Karl Schlobohm Company Secretary

#### **Competent Persons Statement**

The information herein that relates to Exploration Targets and Exploration Results is based on information compiled by Mr Neil Stuart, who is a Fellow of The Australasian Institute of Mining and Metallurgy. Mr Neil Stuart is a Director of Dark Horse Resources Ltd.

Mr Stuart has more than five years experience which is relevant to the style of mineralisation and type of deposit being reported and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves' (the JORC Code). This public report is issued with the prior written consent of the Competent Person(s) as to the form and context in which it appears.

#### For further information contact:

#### **Mr David Mason**

Executive Director, Dark Horse Resources Ltd Ph: 07 3303 0650

#### Pru Maclean

Investor Relations, Dark Horse Resources Ltd Ph: 07 3303 0650

#### **About Dark Horse Resources:**

Since listing on the Australian Stock Exchange in 2011, Dark Horse Resources (formerly Navaho Gold) has evolved into a diversified exploration company primarily focussed on Argentina. The Company currently has gold, coal, lithium and energy projects in Argentina.

Argentina is undergoing significant political and social reforms, which has created a very attractive destination for mining and diverse project interests.

Website: www.darkhorseresources.com.au

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# Annexure A –Table of Additional Sample Results

Sample	Туре	Where	East	North	Length	Ta ppm	Li %	Li20%	Ta2O5 ppm
A-1151	Rock Chip	Surface	3586070	6465567	2.00	124.5	0.01	0.011	152.03
A-1152	Rock Chip	Surface	3586109	6465589	2.00	17.2	0.00	0.01	21.00
A-1153	Rock Chip	Waste dump	3586103	6465799	R=5,00 mts	14.1	0.00	0.01	17.22
A-1154	Rock Chip	Surface	3586110	6465888	2.00	8.6	0.25	0.54	10.50
A-1155	Rock Chip	Surface	3586139	6465794	2.00	33.4	0.00	0.01	40.78
A-1156	Rock Chip	Waste dump	3586162	6465838	R=5,00 mts	11.0	0.00	0.01	13.43
A-1157	Rock Chip	Waste dump	3586188	6465838	R=5,00 mts	53.8	0.00	0.01	65.70
A-1158	Rock Chip	Waste dump	3586194	6465862	R=5,00 mts	26.9	0.01	0.02	32.85
A-1159	Rock Chip	Waste dump	3586482	6465837	R=5,00 mts	0.5	0.01	0.01	0.61
A-1160	Rock Chip	Waste dump	3586500	6465875	R=5,00 mts	7.2	1.20	2.58	8.79
A-1161	Rock Chip	Waste dump	3586583	6466065	R=5,00 mts	21.3	0.02	0.04	26.01
A-1162	Rock Chip	Surface	3586586	6466158	2.00	27.5	0.01	0.03	33.58
A-1163	Rock Chip	Waste dump	3586526	6466024	R=5,00 mts	12.1	0.39	0.84	14.78
A-1164	Rock Chip	Waste dump	3586447	6466156	R=5,00 mts	18.7	0.14	0.31	22.83
A-1165	Rock Chip	Waste dump	3586405	6466140	R=5,00 mts	4.9	0.02	0.05	5.98
A-1166	Rock Chip	Surface	3586366	6466164		8.9	0.04	0.08	10.87
A-1167	Rock Chip	Waste dump	3586352	6466089	R=5,00 mts	14.0	0.06	0.12	17.10
A-1168	Rock Chip	Waste dump	3586322		R=5,00 mts	17.8	0.03	0.06	21.74
A-1169	Rock Chip	Waste dump	3586290		R=5,00 mts	13.7	0.75	1.62	16.73
A-1170	Rock Chip	Waste dump	3586202		R=5,00 mts	15.5	0.01	0.02	18.93
A-1172	Rock Chip	Waste dump	3586196		R=5,00 mts	6.1	0.03	0.07	7.45
A-1173	Rock Chip	Waste dump	3586172		R=5,00 mts	9.7	0.03	0.06	11.84
A-1174	Rock Chip	Waste dump	3586130		R=5,00 mts	13.9	0.01	0.02	16.97
A-1175	Rock Chip	Surface	3586145	6466031	2.00	21.1	0.01	0.03	25.77
A-1176	Rock Chip	Waste dump	3586110		R=5,00 mts	7.3	0.02	0.03	8.91
A-1177	Rock Chip	Pegmatite dike	3586034	6466214		13.8	0.00	0.01	16.85
A-1178	Rock Chip	Surface	3586199	6465992		25.6	0.01	0.01	31.26
A-1179	Rock Chip	Waste dump	3586200		R=5,00 mts	25.2	0.01	0.02	30.77
A-1180	Rock Chip	Waste dump	3586156		R=5,00 mts	34.8	0.00	0.00	42.49
A-1181	Rock Chip	Waste dump	3586237		R=5,00 mts	21.0	0.01	0.02	25.64
A-1182	Rock Chip	Waste dump	3586322		R=5,00 mts	32.8	0.01	0.01	40.05
A-1183	Rock Chip	Waste dump	3586335		R=5,00 mts	28.7	0.02	0.04	35.05
A-1184	Rock Chip	Waste dump	3586345		R=5,00 mts	22.1	0.02	0.04	26.99
A-1185	Rock Chip	Waste dump	3586335		R=5,00 mts	10.9	0.01	0.02	13.31
A-1186	Rock Chip	Waste dump	3586458		R=5,00 mts	3.4	0.00	0.00	4.15
A-1188	Rock Chip	Waste dump	3586414		R=5,00 mts	225.0	0.02	0.03	274.75
A-1189	Rock Chip	Waste dump	3586432		R=5,00 mts	25.5	0.02	0.04	31.14
A-1190	Rock Chip	Waste dump	3586427		R=5,00 mts	22.7	0.25	0.53	27.72
A-1191	Rock Chip	Waste dump	3586444		R=5,00 mts	9.9	0.18	0.39	12.09
A-1192	Rock Chip	Pegmatite dike	3586598	6466289		8.0	0.00	0.00	9.77
A-1193	Rock Chip	Pegmatite dike	3586532	6466347		5.3	0.00	0.00	6.47
A-1194	Rock Chip	Pegmatite dike	3586518	6466387		5.3	0.00	0.00	6.47
A-1195	Rock Chip	Pegmatite dike	3586487	6466468		4.9	0.00	0.00	5.98
A-1196	Rock Chip	Pegmatite dike	3586522	6466252		5.7	0.00	0.01	6.96
A-1197	Rock Chip	Pegmatite dike	3586503	6466197		15.8	0.01	0.02	19.29
A-1198	Rock Chip	Waste dump	3586477		R=5,00 mts	26.8	0.02	0.04	32.73
A-1198 A-1199	Rock Chip	Pegmatite dike	3586530	6466612		8.3	0.02	0.04	10.14
A-1199 A-1201	Rock Chip	Pegmatite dike	3585962	6465692		14.9	0.01	0.01	18.19
A-1201 A-1202	Rock Chip	Pegmatite dike	3585708	6465618		7.8	0.00	0.00	9.52
A-1202 A-1203	Rock Chip	Pegmatite dike	3585904	6465497		8.9	0.00	0.01	10.87
A-1203 A-1204	Rock Chip	Pegmatite dike	3585931	6465486		40.1	0.00	0.00	48.97
								0.00	
A-1205	Rock Chip	Pegmatite dike	3586011	6465447	2.00	6.7	0.00	0.00	8.18



# **JORC Code, 2012 Edition – Table 1 report template**

**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>A total of 194 rock chip samples taken from surface (109 samples), underground workings (39 samples) and waste dumps (46 samples). Results also relate to visual observations and surface measurements of rock wall faces in quarries, underground workings and rock outcrops.</li> <li>The surface rock chip samples and waste dump locations were measured by hand held GPS and related to fixed points with coordinates given by differential GPS and can be considered accurate to within 3 m, which is sufficient for the scope of the sample results.</li> <li>The underground sample location where measured from a fixed point with coordinates given by differential GPS in the entrance of a gallery, and surveyed within the gallery using Brunton compass and measuring tape.</li> </ul>
Drilling techniques	<ul> <li>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).</li> </ul>	No drilling undertaken
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>	No drilling undertaken



Criteria	JORC Code explanation	Commentary
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>A description of outcrops and sub-outcrops including rock type, dominant mineralogy, structure and mineralization was recorded.</li> <li>A brief description of waste dump minerals was recorded.</li> <li>N-A</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 sub-sampling 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/secondhalf sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>Samples as described above were submitted to the analytical laboratory without subsampling.</li> <li>Samples were logged into the laboratory tracking system, weighed as received, crushed so 70% &lt; 2 mm, split and ¼ of the split sample pulverized so 85 % &lt; 75 μm). Aliquots of pulverized samples were subject to Multi-Element Analysis by Sodium Peroxide Fusion and ICP-MS (ME-MS91) and Li Analysis by Sodium Peroxide Fusion and ICP-ES (ME-ICP82b).</li> <li>Sample sizes were appropriate for grain size of material sampled considering the specific targeted nature of the sampling for spodumene.</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>The Peroxide Fusion digestion is a specialized and appropriate method for accurately measuring ore grade Lithium content.</li> <li>Standards and blanks were submitted with the samples for analysis.</li> </ul>
Verification of sampling and	<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> </ul>	<ul> <li>Sample data were recorded on field logging sheets and data entered into a digital MS Access database.</li> <li>Analysis is checked by the use of certified reference materials</li> <li>Data is recorded on both paper and electronic formats with back up</li> </ul>



Criteria	JORC Code explanation	Commentary
assaying	Discuss any adjustment to assay data.	
Location of data points	<ul> <li>Accuracy and quality of surveys used to locate drill holes (collar and downhole 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>All samples measurement locations and rock outcrop locations were located using a handheld GPS and are accurate ± 5m, but referenced to a number of fix points surveyed by differential GPS.</li> <li>Reference system used was Gaus Kruger Zone 2 – Campo Inchauspe (Argentina reference coordinates)</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> <li>Whether sample compositing has been applied.</li> </ul>	<ul> <li>Rock chip samples were collected from specific outcrops of pegmatite generally on a regular spacing of 2 meters. The nature of the sampling was to assess lithium and other elements contained in the pegmatites in and around old mine workings and adjacent outcrops.</li> <li>No sample compositing occurred.</li> </ul>
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>	<ul> <li>Rock measurements were taken perpendicular to the strike.</li> <li>Orientation of measurements is not expected to contribute to sampling bias.</li> </ul>
Sample security	The measures taken to ensure sample security.	<ul> <li>Sample security was managed by the Company using industry standard chain of custody procedure. Company geologists and licensed couriers transported the samples from the field to the ALS laboratory for reception.</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	<ul> <li>No external audit or review of the sampling techniques or data has been undertaken beyond that of normal internal Company procedures and that of the respective Competent Persons in the compilation of this and supporting, separate reports.</li> </ul>



**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>Measurements carried out on Las Tapias Mine (file 912-38), La Protectora mine (file 1567-41), Rosita Mine (file 5601/58), San Telesforo Mine (file 1698/41), San Jose (file 5445/57), San Jose II (file 10874/04) and tenement (file 2013/2016) which is held by Dark Horse under an Option Agreement with Pampa Litio SA (ASX Announcement October 2016).</li> <li>N-A.</li> </ul>
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	<ul> <li>Previous exploration has been carried out by Pampa Litio SA under the management of Dr Gustavo Rodriguez, a principal of Pampa Litio SA, which included geological mapping, rock chip sampling and assaying. These results were reported to the ASX in October 2016.</li> </ul>
Geology	Deposit type, geological setting and style of mineralisation.	<ul> <li>Mineralization model corresponds to pegmatite within diorites or intruded into low grade metamorphic schists.</li> <li>In Cordoba province, the project is located in the area of the Achala Batholith, a prominent Devonian aged granite suite that intrudes the central part of the high-grade metamorphic rocks of Sierras de Cordoba.</li> <li>Mineralization style corresponds to late stage, slower cooling of intrusive mineralised fluids from large intrusive bodies, with the subsequent formation of large crystals of a great variety of minerals.</li> </ul>
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> </ul> </li> </ul>	No drilling undertaken



Criteria	JORC Code explanation	Commentary
	<ul> <li>down hole length and interception depth</li> <li>hole length.</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>	
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>	• N-A
Relationship between mineralisati on 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>	Unknown at this stage
Diagrams	<ul> <li>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.</li> </ul>	Plans of outcrop locations are provided in report.
Balanced reporting	<ul> <li>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.</li> </ul>	<ul> <li>The release includes defined levels of anomalous results however further sampling is required to validate the tenor of results</li> </ul>



Criteria	JORC Code explanation	Commentary
Other substantive exploration data	<ul> <li>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.</li> </ul>	No new data at this stage.
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>	<ul> <li>Satellite image processing, Geological mapping 1:2000, Rock chip sampling, Trench sampling, and Drilling. These activities are planned on a 24 month working schedule.</li> </ul>

# **Section 3 Estimation and Reporting of Mineral Resources** (Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	<ul> <li>Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.</li> <li>Data validation procedures used.</li> </ul>	Not Applicable
Site visits	<ul> <li>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>If no site visits have been undertaken indicate why this is the case.</li> </ul>	Not Applicable
Geological interpretatio n	<ul> <li>Confidence in (or conversely, the uncertainty of ) the geological interpretation of the mineral deposit.</li> <li>Nature of the data used and of any assumptions made.</li> <li>The effect, if any, of alternative interpretations on Mineral Resource estimation.</li> <li>The use of geology in guiding and controlling Mineral Resource estimation.</li> <li>The factors affecting continuity both of grade and geology.</li> </ul>	Not Applicable



Criteria	JORC Code explanation	Commentary
Dimensions	<ul> <li>The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.</li> </ul>	Not Applicable
Estimation and modelling techniques	<ul> <li>The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.</li> <li>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</li> <li>The assumptions made regarding recovery of by-products.</li> <li>Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).</li> <li>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</li> <li>Any assumptions behind modelling of selective mining units.</li> <li>Any assumptions about correlation between variables.</li> <li>Description of how the geological interpretation was used to control the resource estimates.</li> <li>Discussion of basis for using or not using grade cutting or capping.</li> <li>The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.</li> </ul>	Not Applicable
Moisture	<ul> <li>Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</li> </ul>	Not Applicable
Cut-off parameters	The basis of the adopted cut-off grade(s) or quality parameters applied.	Not Applicable
Mining factors or	<ul> <li>Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable</li> </ul>	Not Applicable



Criteria	JORC Code explanation	Commentary
assumptions	prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	
Metallurgica I factors or assumptions	• The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	Not Applicable
Environmen- tal factors or assumptions	<ul> <li>Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.</li> </ul>	Not Applicable
Bulk density	<ul> <li>Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.</li> <li>The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.</li> <li>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</li> </ul>	Not Applicable



Criteria	JORC Code explanation	Commentary
Classificatio n	<ul> <li>The basis for the classification of the Mineral Resources into varying confidence categories.</li> <li>Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).</li> <li>Whether the result appropriately reflects the Competent Person's view of the deposit.</li> </ul>	Not Applicable
Audits or reviews	The results of any audits or reviews of Mineral Resource estimates.	Not Applicable
Discussion of relative accuracy/ confidence	<ul> <li>Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.</li> <li>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</li> <li>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li> </ul>	Not Applicable

**Section 4 Estimation and Reporting of Ore Reserves** (Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral Resource	<ul> <li>Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.</li> </ul>	Not Applicable



Criteria	JORC Code explanation	Commentary
estimate for conversion to Ore Reserves	Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.	
Site visits	<ul> <li>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>If no site visits have been undertaken indicate why this is the case.</li> </ul>	Not Applicable
Study status	<ul> <li>The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.</li> <li>The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.</li> </ul>	Not Applicable
Cut-off parameters	The basis of the cut-off grade(s) or quality parameters applied.	Not Applicable
Mining factors or assumptions	<ul> <li>The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).</li> <li>The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as prestrip, access, etc.</li> <li>The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.</li> <li>The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).</li> <li>The mining dilution factors used.</li> <li>The mining recovery factors used.</li> </ul>	Not Applicable



Criteria	JORC Code explanation	Commentary
	<ul> <li>Any minimum mining widths used.</li> <li>The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.</li> <li>The infrastructure requirements of the selected mining methods.</li> </ul>	
Metallurgica I factors or assumptions	<ul> <li>The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.</li> <li>Whether the metallurgical process is well-tested technology or novel in nature.</li> <li>The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.</li> <li>Any assumptions or allowances made for deleterious elements.</li> <li>The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.</li> <li>For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?</li> </ul>	Not Applicable
Environmen- tal	<ul> <li>The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.</li> </ul>	Not Applicable
Infrastructur e	<ul> <li>The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.</li> </ul>	Not Applicable
Costs	<ul> <li>The derivation of, or assumptions made, regarding projected capital costs in the study.</li> <li>The methodology used to estimate operating costs.</li> <li>Allowances made for the content of deleterious elements.</li> </ul>	Not Applicable



Criteria	JORC Code explanation	Commentary
	<ul> <li>The source of exchange rates used in the study.</li> <li>Derivation of transportation charges.</li> <li>The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.</li> <li>The allowances made for royalties payable, both Government and private.</li> </ul>	
Revenue factors	<ul> <li>The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.</li> <li>The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.</li> </ul>	Not Applicable
Market assessment	<ul> <li>The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.</li> <li>A customer and competitor analysis along with the identification of likely market windows for the product.</li> <li>Price and volume forecasts and the basis for these forecasts.</li> <li>For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.</li> </ul>	Not Applicable
Economic	<ul> <li>The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.</li> <li>NPV ranges and sensitivity to variations in the significant assumptions and inputs.</li> </ul>	Not Applicable
Social	<ul> <li>The status of agreements with key stakeholders and matters leading to social licence to operate.</li> </ul>	Not Applicable
Other	<ul> <li>To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:</li> <li>Any identified material naturally occurring risks.</li> <li>The status of material legal agreements and marketing arrangements.</li> <li>The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government</li> </ul>	Not Applicable



Criteria	JORC Code explanation	Commentary
	and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.	
Classificatio n	<ul> <li>The basis for the classification of the Ore Reserves into varying confidence categories.</li> <li>Whether the result appropriately reflects the Competent Person's view of the deposit.</li> <li>The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).</li> </ul>	Not Applicable
Audits or reviews	The results of any audits or reviews of Ore Reserve estimates.	Not Applicable
Discussion of relative accuracy/ confidence	<ul> <li>Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.</li> <li>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</li> <li>Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.</li> <li>It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li> </ul>	Not Applicable



**Section 5 Estimation and Reporting of Diamonds and Other Gemstones** (Criteria listed in other relevant sections also apply to this section. Additional guidelines are available in the 'Guidelines for the Reporting of Diamond Exploration Results' issued by the Diamond Exploration Best Practices Committee established by the Canadian Institute of Mining, Metallurgy and Petroleum.)

Criteria	JORC Code explanation	Commentary
Indicator minerals	<ul> <li>Reports of indicator minerals, such as chemically/physically distinctive garnet, ilmenite, chrome spinel and chrome diopside, should be prepared by a suitably qualified laboratory.</li> </ul>	Not Applicable
Source of diamonds	<ul> <li>Details of the form, shape, size and colour of the diamonds and the nature of the source of diamonds (primary or secondary) including the rock type and geological environment.</li> </ul>	Not Applicable
Sample collection	<ul> <li>Type of sample, whether outcrop, boulders, drill core, reverse circulation drill cuttings, gravel, stream sediment or soil, and purpose (eg large diameter drilling to establish stones per unit of volume or bulk samples to establish stone size distribution).</li> <li>Sample size, distribution and representivity.</li> </ul>	Not Applicable
Sample treatment	<ul> <li>Type of facility, treatment rate, and accreditation.</li> <li>Sample size reduction. Bottom screen size, top screen size and re-crush.</li> <li>Processes (dense media separation, grease, X-ray, hand-sorting, etc).</li> <li>Process efficiency, tailings auditing and granulometry.</li> <li>Laboratory used, type of process for micro diamonds and accreditation.</li> </ul>	Not Applicable
Carat	<ul> <li>One fifth (0.2) of a gram (often defined as a metric carat or MC).</li> </ul>	Not Applicable
Sample grade	<ul> <li>Sample grade in this section of Table 1 is used in the context of carats per units of mass, area or volume.</li> <li>The sample grade above the specified lower cut-off sieve size should be reported as carats per dry metric tonne and/or carats per 100 dry metric tonnes. For alluvial deposits, sample grades quoted in carats per square metre or carats per cubic metre are acceptable if accompanied by a volume to weight basis for calculation.</li> <li>In addition to general requirements to assess volume and density there is a need to relate stone frequency (stones per cubic metre or tonne) to stone size (carats per stone) to derive sample grade (carats per tonne).</li> </ul>	Not Applicable



Criteria	JORC Code explanation	Commentary
Reporting of Exploration Results	<ul> <li>Complete set of sieve data using a standard progression of sieve sizes per facies.         Bulk sampling results, global sample grade per facies. Spatial structure analysis         and grade distribution. Stone size and number distribution. Sample head feed         and tailings particle granulometry.</li> <li>Sample density determination.</li> <li>Per cent concentrate and undersize per sample.</li> <li>Sample grade with change in bottom cut-off screen size.</li> <li>Adjustments made to size distribution for sample plant performance and         performance on a commercial scale.</li> <li>If appropriate or employed, geostatistical techniques applied to model stone         size, distribution or frequency from size distribution of exploration diamond         samples.</li> <li>The weight of diamonds may only be omitted from the report when the         diamonds are considered too small to be of commercial significance. This lower         cut-off size should be stated.</li> </ul>	Not Applicable
Grade estimation for reporting Mineral Resources and Ore Reserves	<ul> <li>Description of the sample type and the spatial arrangement of drilling or sampling designed for grade estimation.</li> <li>The sample crush size and its relationship to that achievable in a commercial treatment plant.</li> <li>Total number of diamonds greater than the specified and reported lower cut-off sieve size.</li> <li>Total weight of diamonds greater than the specified and reported lower cut-off sieve size.</li> <li>The sample grade above the specified lower cut-off sieve size.</li> </ul>	Not Applicable
Value estimation	<ul> <li>Valuations should not be reported for samples of diamonds processed using total liberation method, which is commonly used for processing exploration samples.</li> <li>To the extent that such information is not deemed commercially sensitive, Public Reports should include:         <ul> <li>diamonds quantities by appropriate screen size per facies or depth.</li> <li>details of parcel valued.</li> <li>number of stones, carats, lower size cut-off per facies or depth.</li> </ul> </li> </ul>	Not Applicable



Criteria	JORC Code explanation	Commentary
	<ul> <li>The average \$/carat and \$/tonne value at the selected bottom cut-off should be reported in US Dollars. The value per carat is of critical importance in demonstrating project value.</li> <li>The basis for the price (eg dealer buying price, dealer selling price, etc).</li> <li>An assessment of diamond breakage.</li> </ul>	
Security and integrity	<ul> <li>Accredited process audit.</li> <li>Whether samples were sealed after excavation.</li> <li>Valuer location, escort, delivery, cleaning losses, reconciliation with recorded sample carats and number of stones.</li> <li>Core samples washed prior to treatment for micro diamonds.</li> <li>Audit samples treated at alternative facility.</li> <li>Results of tailings checks.</li> <li>Recovery of tracer monitors used in sampling and treatment.</li> <li>Geophysical (logged) density and particle density.</li> <li>Cross validation of sample weights, wet and dry, with hole volume and density, moisture factor.</li> </ul>	Not Applicable
Classificatio n	<ul> <li>In addition to general requirements to assess volume and density there is a need to relate stone frequency (stones per cubic metre or tonne) to stone size (carats per stone) to derive grade (carats per tonne). The elements of uncertainty in these estimates should be considered, and classification developed accordingly.</li> </ul>	Not Applicable

