

7 December 2017

The Manager  
Company Announcements Office  
ASX Limited

**IRONBARK ZINC LIMITED**

**Identification of anomalous Germanium in ore at Citronen**

Ironbark Zinc Limited (**Company**) (ASX: IBG) advises that during ongoing metallurgical testwork a composite ore sample, see Figure 1, considered representative of the Beach Zone ore body of mineralisation was assayed, for the first time, for germanium (Ge) and returned an anomalous result of 24 parts per million (ppm). Germanium is known to replace zinc in the sphalerite (zinc sulphide) lattice in some zinc ore bodies and is generally observed, where mined, to report to the processed zinc concentrate where the grade is likely to increase pro-rata with the zinc grade. In the Citronen project the zinc is generally upgraded between 8 and 9 times to a predicted 53% zinc in concentrate grade.

The potential grade, continuity or value, if any, of any germanium is currently under investigation and will be reported in more detail in due course.

ENDS

**For further information please contact:**

Jonathan Downes  
Managing Director  
Ironbark Zinc Limited  
Tel: +61 8 6461 6350  
E-mail: [admin@ironbark.gl](mailto:admin@ironbark.gl)  
Website: [www.ironbark.gl](http://www.ironbark.gl)

James Moses  
Media and Investor Relations  
Mandate Corporate  
Tel: +61 420 991 574  
E: [james@mandatecorporate.com.au](mailto:james@mandatecorporate.com.au)

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## About Ironbark

Ironbark is listed on the Australian Securities Exchange and is seeking to become a base metal mining house.

Ironbark seeks to build shareholder value through exploration and development of its projects and also seeks to actively expand the project base controlled by Ironbark through acquisition. The management and board of Ironbark have extensive technical and corporate experience in the minerals sector.

The wholly owned Citronen base metal project currently hosts in excess of 13.1 Billion pounds of zinc (Zn) and lead (Pb). For full details refer to ASX announcement 25 November 2014 –Citronen Project Resource Update – JORC 2012 compliant resource. Ironbark is not aware of any new information or data that materially affects the information included in this ASX release, and Ironbark confirms that, to the best of its knowledge, all material assumptions and technical parameters underpinning the resource estimates in this release continue to apply and have not materially changed. Ironbark has completed a Feasibility Study on the Citronen base metal project and has secured a 30 year mining licence.

The current JORC 2012 compliant resource for Citronen:

### **70.8 million tonnes at 5.7% Zn + Pb**

<b>Category</b>	<b>Mt</b>	<b>Zn%</b>	<b>Pb%</b>	<b>Zn+Pb%</b>
Measured	25.0	5.0	0.5	5.5
Indicated	26.5	5.5	0.5	6.0
Inferred	19.3	4.9	0.4	5.3

*Using Ordinary Kriging interpolation and reported at a 3.5% Zn cut-off*

Including a higher grade resource of:

### **29.9 million tonnes at 7.1% Zn + Pb**

<b>Category</b>	<b>Mt</b>	<b>Zn%</b>	<b>Pb%</b>	<b>Zn+Pb%</b>
Measured	8.9	6.6	0.6	7.2
Indicated	13.7	6.8	0.5	7.3
Inferred	7.3	6.2	0.5	6.6

*Using Ordinary Kriging interpolation and reported at a 5.0% Zn cut-off*

***“Ironbark is an emerging leader amongst Australia’s mineral resource companies, dedicated to the development of its major base metal mining operation in Greenland – the world class Citronen Project, and the acquisition of quality base metals projects.”***

## **Disclosure Statements and Important Information**

### **Forward Looking Statements**

The following information is not intended to guide any investment decisions in Ironbark Zinc Limited.

This material contains certain forecasts and forward-looking information, including possible or assumed future performance, costs, production levels or rates, reserves and resources, prices and valuations and industry growth and other trends. Such forecasts and information are not a guarantee of future performance and involve many risks and uncertainties, as well as other factors. Actual results and developments may differ materially from those implied or expressed by these statements and are dependent on a variety of factors. The Company believes that it has a reasonable basis for making the forward looking statements in the announcement, based on the information contained in this and previous ASX announcements.

The Citronen zinc project is considered to be at an early development stage and will require further regulatory approvals and securing of finance and there is no certainty that these will occur. Nothing in this material should be construed as either an offer to seek a solicitation or as an offer to buy or sell Ironbark securities. Consideration of the technical and financial factors requires skilled analysis and understanding of their context.

Ironbark is not aware of any new information or data that materially affects the information included in this ASX release, and Ironbark confirms that, to the best of its knowledge, all material assumptions and technical parameters underpinning the estimates in this release continue to apply and have not materially changed

### **Competent Persons Statement**

The information included in this report that relates to Exploration Results & Mineral Resources is based on information compiled by Ms Laursen (B. ESc Hons (Geol), MSEG, MAIG GradDipAppFin), an employee of Ironbark Zinc Limited. Ms Laursen has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Ms Laursen consents to the inclusion in the report of the matters based on this information in the form and context in which it appears

### **Competent Persons Disclosure**

Ms Laursen is an employee of Ironbark Zinc Limited and currently holds securities in the company.

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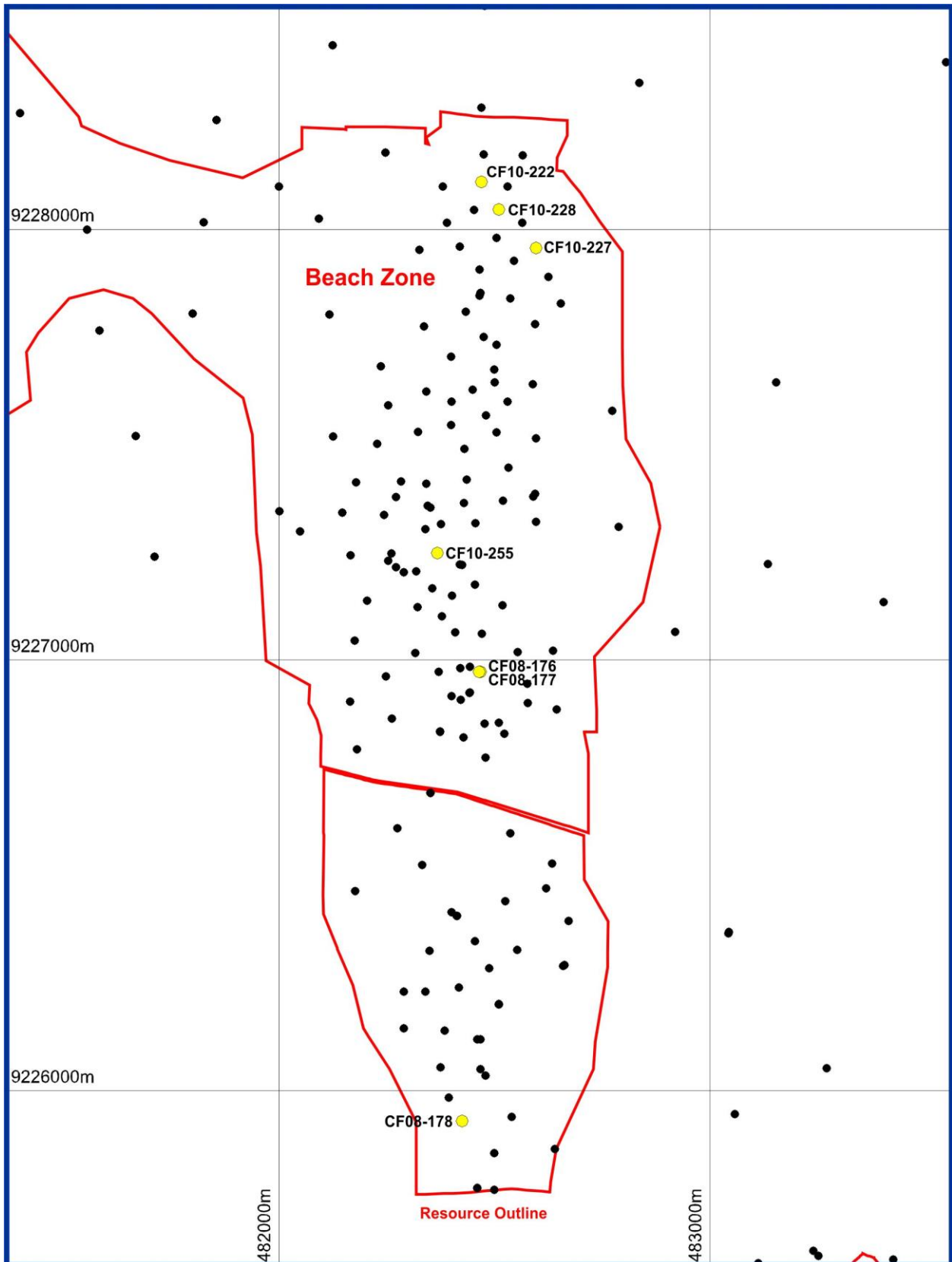


Figure 1: Location of drill holes from which the bulk sample material was collected prior to being blended into a composite sample.

# JORC Code, 2012 Edition – Table 1

## Section 1 Sampling Techniques and Data

### Citronen Fjord Project – Ironbark zinc Limited

Criteria	JORC Code explanation	Commentary																																				
Sampling techniques	<ul style="list-style-type: none"> <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>	<p>All samples are from half diamond core, and include a mixture of BQ or NQ sizes.</p> <p>Samples taken for this metallurgy composite sample have been assayed previously and are considered representative for the Citronen ore body.</p> <p>The bulk sample, from which the composite was derived, was comprised of the following material:</p> <table border="1"> <thead> <tr> <th>Hole Number</th> <th>Zone</th> <th>From (m)</th> <th>To (m)</th> </tr> </thead> <tbody> <tr> <td>CF08-176</td> <td>Beach - Level 2</td> <td>88.60</td> <td>92.00</td> </tr> <tr> <td>CF08-177</td> <td>Beach - Level 2</td> <td>95.55</td> <td>102.30</td> </tr> <tr> <td>CF08-177</td> <td>Beach - Level 2</td> <td>89.35</td> <td>95.55</td> </tr> <tr> <td>CF08-178</td> <td>Beach - Level 2</td> <td>376.30</td> <td>380.00</td> </tr> <tr> <td>CF10-222</td> <td>Beach - Level 3</td> <td>260.00</td> <td>264.70</td> </tr> <tr> <td>CF10-227</td> <td>Beach - Level 3</td> <td>225.40</td> <td>230.50</td> </tr> <tr> <td>CF10-228</td> <td>Beach - Level 2</td> <td>149.00</td> <td>157.00</td> </tr> <tr> <td>CF10-255</td> <td>Beach - Level 2</td> <td>77.40</td> <td>83.00</td> </tr> </tbody> </table> <p>Full details on the sampling procedure is contained in Table 1 of ASX release 24/11/2014.</p> <p>The bulk sample was sent to ALS Laboratories in Balcatta, WA for all testwork. An aqua regia digest was used followed by ICP-MS. The detection limit using this method for Germanium is 0.05ppm.</p>	Hole Number	Zone	From (m)	To (m)	CF08-176	Beach - Level 2	88.60	92.00	CF08-177	Beach - Level 2	95.55	102.30	CF08-177	Beach - Level 2	89.35	95.55	CF08-178	Beach - Level 2	376.30	380.00	CF10-222	Beach - Level 3	260.00	264.70	CF10-227	Beach - Level 3	225.40	230.50	CF10-228	Beach - Level 2	149.00	157.00	CF10-255	Beach - Level 2	77.40	83.00
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<i>Drilling techniques</i>	<ul style="list-style-type: none"> <li>• <i>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).</i></li> </ul>	All drilling at the Citronen Project has been standard tube diamond drilling, of either BQ, NQ or HQ diameter. In areas with overburden either a tri- cone roller bit or shoe bit was used to drill down to competent rock. Overburden material was discarded.
<i>Drill sample recovery</i>	<ul style="list-style-type: none"> <li>• <i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></li> <li>• <i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li> <li>• <i>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.</i></li> </ul>	<p>Core recoveries were excellent throughout the project and the need for triple tube drilling was not required. All core was checked &amp; measured by a geologist and rod counts carried out by drillers.</p> <p>Information from the diamond drilling does not suggest that there is a correlation between recoveries and grade. Diamond drill core from the Citronen deposit has a very high recovery.</p>
<i>Logging</i>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li> <li>• <i>The total length and percentage of the relevant intersections logged.</i></li> </ul>	<p>All drill holes were logged for a combination of geological and geotechnical attributes to a level of detail to support a Mineral Resource estimation.</p> <p>Logging is both qualitative and semi-quantitative in nature; all drill core was photographed.</p> <p>The total length of all recovered drill core was logged in detail.</p>
<i>Sub-sampling techniques and sample preparation</i>	<ul style="list-style-type: none"> <li>• <i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> <li>• <i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i></li> <li>• <i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></li> <li>• <i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></li> </ul>	<p>Of 7,396 samples, 6,422 were half-core (87%), 968 were quarter-core (13%) and six samples were whole core samples. All core was sawn with a core- saw.</p> <p>All drilling conducted at Citronen was diamond drilling.</p> <p>All samples were crushed, split and pulverised at a laboratory. The sample preparation is industry standard for the fine-grained nature of this Sedimentary-Exhalative (SEDEX) mineralisation style.</p> <p>Laboratory certified standards and duplicates were used alternatively every 10 samples as a quality control measure.</p> <p>One duplicate per twenty samples was taken.</p> <p>The sample sizes are appropriate to the fine- grained mineralisation of this SEDEX mineralisation style.</p>

Criteria	JORC Code explanation	Commentary
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <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>	<p>The assay methods used are considered appropriate and near total digestion.</p> <p>A Niton XL3t hand-held XRF analyser was used to determine the appropriate core intervals to send for laboratory assay. Each reading was 30 seconds long, taken each 5cm along the drill core.</p> <p>Duplicate samples and laboratory certified standards have been used alternatively every ten samples. All samples have returned results within an acceptable range.</p>
Verification of sampling and assaying	<ul style="list-style-type: none"> <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>	<p>Ravensgate Consultants conducted a verification procedure on the Citronen database during the resource estimation process.</p> <p>Several drill holes have been twinned and have shown comparable results including;</p> <p>Holes CF08-153 &amp; CF08-153A (both vertical holes) were drilled 9m horizontally apart at surface with an elevation difference of 12cm. CF08-153 returned 9.1m @ 5.16% Zn from 14.0m and CF08-153A returned 9.0m @ 5.92% Zn from 14.0m.</p> <p>Holes CF10-245A and CF10-245B (both vertical holes) were drilled 1 metre apart at surface. The drill holes intersected 12.2m and 13.7m of overburden (glacial till) respectively and intersected the Hangingwall Debris Flow Unit at 175.5m and 174.5m depth respectively.</p> <p>Primary data was either collected as paper logs, or entered into a database program or Excel spreadsheet. Paper logs were later transferred to a digital database. Data was verified and checked by senior Ironbark staff and by external consultants Expedio, Ravensgate &amp; Mining Plus. Database was stored as Excel spreadsheets and a Microsoft Access Database.</p> <p>There has been no adjustment to the assay data.</p>
Location of data points	<ul style="list-style-type: none"> <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> </ul>	<p>All drill holes prior to 2011 were surveyed using a DGPS which has an accuracy of &lt;1m. 2011 holes were picked up by handheld GPS which has proven to have an accuracy of approximately 5m. Downhole surveys were conducted on</p>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>• <i>Specification of the grid system used.</i></li> <li>• <i>Quality and adequacy of topographic control.</i></li> </ul>	<p>all angled drill holes using REFLEX (industry standard) equipment.</p> <p>The Grid System used for all location data points at Citronen is UTM WGS 84 Zone 26.</p> <p>Ironbark purchased a Digital Elevation Model, produced from satellite imagery, for the Citronen Region that has an accuracy of approximately 2.5m.</p>
<i>Data spacing and distribution</i>	<ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul>	<p>Hole spacing in the Beach Zone and Discovery Zone averages 50m, in the Esum Zone 150m.</p> <p>The data spacing and distribution is sufficient to determine geological and grade continuity as determined by the JORC code 2012.</p> <p>A composite length of 1m was selected after analysis of the raw sample lengths for use in resource calculations.</p>
<i>Orientation of data in relation to geological structure</i>	<ul style="list-style-type: none"> <li>• <i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li> <li>• <i>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.</i></li> </ul>	<p>The orientation of the drilling is approximately perpendicular to the strike and dip of the mineralisation and therefore should not be biased. Angled drill holes provided a check against mineralisation width in vertical holes.</p> <p>There are no known biases caused by the orientation of the drill holes.</p>
<i>Sample security</i>	<ul style="list-style-type: none"> <li>• <i>The measures taken to ensure sample security.</i></li> </ul>	<p>Drill core was kept on site and sample dispatch was overseen by the site manager. Samples were transported by aircraft to Svalbard (Norway), then air freighted to the laboratory by a local logistics company.</p>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>	<p>Ravensgate reviewed original laboratory assay files and compared them with the database. No errors were found.</p>



## Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>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.</i></li> </ul>	<p>The Citronen Fjord Deposit is located wholly within Exploitation Licence 2016/30 which is 100% owned by Ironbark Zinc Limited. EL2016/30 lies within the Northeast Greenland National Park. A 2% royalty is payable to vendors.</p> <p>The licence was granted in December 2016 and gives Ironbark the right to mine for 30 years.</p>
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li>• <i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	The deposit was previously explored by Platinova A/S between 1993 and 1997.
<i>Geology</i>	<ul style="list-style-type: none"> <li>• <i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	The Citronen Fjord deposit lies within the Palaeozoic Franklinian Basin, a sedimentary basin which extends across Northern Greenland and into Canada. The deposit lies within Ordovician deep water argillaceous rocks, interbedded with carbonate debris flows sourced from the carbonate platform to the south. Base metal mineralisation at Citronen is primarily contained within the Amundsen Land Group mudstones. Three main stratigraphic horizons of mineralisation were identified by Platinova A/S. Known sulphide and zinc mineralisation occurs over an area of 12km in strike (identified to date). The main sulphides present are pyrite, sphalerite and galena. Three types of sulphide mineralisation are present: mound-like masses, interbedded sulphides that form laminae and beds within the mudstones and cross-cutting epigenetic mineralisation that is primarily found in the carbonate debris flows.
<i>Drill hole Information</i>	<ul style="list-style-type: none"> <li>• <i>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:</i> <ul style="list-style-type: none"> <li>○ <i>easting and northing of the drill hole collar</i></li> <li>○ <i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li>○ <i>dip and azimuth of the hole</i></li> </ul> </li> </ul>	A complete list of holes drilled at the Citronen Project is in Table 1 of ASX announcement dated 24/11/2014.

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>○ <i>down hole length and interception depth</i></li> <li>○ <i>hole length.</i></li> <li>● <i>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.</i></li> </ul>	
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> <li>● <i>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.</i></li> <li>● <i>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.</i></li> <li>● <i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></li> </ul>	The Germanium result was a single assay and therefore has not been weighted.
<i>Relationship between mineralisation widths and intercept lengths</i>	<ul style="list-style-type: none"> <li>● <i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li>● <i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li>● <i>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').</i></li> </ul>	The germanium assay was a single assay from a bulk composite sample of ore therefore there are no width/intercept relationships.
<i>Diagrams</i>	<ul style="list-style-type: none"> <li>● <i>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.</i></li> </ul>	Refer to Figure 1.
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li>● <i>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.</i></li> </ul>	All results have been reported.
<i>Other substantive</i>	<ul style="list-style-type: none"> <li>● <i>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey</i></li> </ul>	An updated Feasibility Study was released on 12/09/2017.

Criteria	JORC Code explanation	Commentary
<i>exploration data</i>	<i>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.</i>	
<i>Further work</i>	<ul style="list-style-type: none"> <li><i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> <li><i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul>	A positive feasibility study report for the Citronen Project was released to the ASX on 12/09/2017. The project is being developed to become an operating mine and as the deposit is open in every direction further exploration (drilling) will be conducted in the future.