



**ASX Announcement**  
12 December 2016

## **Ore Sorting To Optimise Gold Production At Nicolsons**

Pantoro Limited (**ASX:PNR**) (**Pantoro**) is pleased to advise that it has completed extensive sorting test work on ore from the Nicolsons Mine. As a result of the testing and financial analysis, Pantoro has placed an order for and committed to installation of a Steinert Multi-Sensor Ore Sorter.

- Ore sorting trials conducted with multiple suppliers, all demonstrating outstanding results.
- A Steinert multi-sensor ore sorter has been ordered and detailed engineering is nearing completion.
- Site works due to commence during the current month, and the ore sorter is planned to be fully operational in April 2018.
- Overall gold recovery of 95 to 98% in test samples depending on ore type.
- Once installed, ore sorting is expected to result in a 30 to 60% reduction in material reporting to the mill, resulting in mill feed grades of 1.5 to 2.5 times the mined grade based on test samples completed to date.
- Ore sorting is expected to facilitate planned gold production increases with only minor additional works required in the processing plant. Pantoro intends to complete the upgrade out of cash flow and existing cash reserves.

Delivery of the ore sorter from Germany to Fremantle Port is expected during December 2017.

Commenting on the ore sorting developments, managing director Paul Cmrlec said "Ore sorting has been a major consideration for increasing capacity of the Nicolsons processing plant for some time and we are thankful to Steinert for their assistance and flexibility in expediting the purchase and delivery of the machine. We are confident that the highly advanced ore sorting technology will return excellent recovery of ore, while substantially increasing feed grade to the mill."

"The installation of the ore sorter will enable us to immediately process the large low grade stockpiles which have been building since mining commenced at Nicolsons as part of the ROM feed. These stockpiles would otherwise remain dormant until the end of mine life. In addition, Pantoro remains focussed on continuing to increase ore production from Nicolsons underground mine in the immediate term, and to commencement of underground mining beneath the Wagtail and Rowdies open pits during the first half of next year."

"We are continuing our strategy of aggressive underground and surface drilling campaigns aimed at substantially increasing Ore Reserves by the middle of 2018, ahead of ramping up to our targeted production rates of 80,000 – 100,000 ounces per annum. The installation of the ore sorter simplifies and substantially reduces the time and cost of the required processing plant upgrade to achieve our goal. We intend to complete the installation of the ore sorter and other upgrades out of cashflow from the operation."

### **Enquiries**

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# Appendix 1 – JORC Code 2012 Edition – Table 1

## ORE SORTING TEST WORK

### SECTION 1: SAMPLING TECHNIQUES AND DATA

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>	<ul style="list-style-type: none"> <li>This report relates only to ore sorting of bulk samples from Nicolsons underground mine.</li> <li>A number of bulk samples of ore from different locations and ore bodies were selected for ore sorting to ensure adequate testing of all potential ore feeds including fresh and oxidized ore. Samples from low grade dumps were also tested</li> <li>Samples of selected ore were primary crushed and screened on site. Ore was either screened to a range of +10mm – 30mm or +20mm – 60mm, with oversize and undersize retained on site.</li> <li>Bulk sample for ore sorting samples were between 300 and 400kg in size.</li> <li>Wet screening of the samples was undertaken to accurately estimate the proportion of material expected to report to the fines fraction.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>Not applicable to this announcement which only refers to ore sorting.</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Not applicable to this announcement which only refers to ore sorting.</li> </ul>
Logging	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Bulk samples sourced from underground development with faces mapped and sampled.</li> </ul>

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <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/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul style="list-style-type: none"> <li>The whole samples were washed at the laboratory and ore sorted through Steinert or Tomra ore sorters.</li> <li>Ore and waste products from each test were accurately weighed in order to calculate the proportion of ore and waste in each sample.</li> <li>The total sample for each ore and waste was crushed to approximately 4mm, homogenized and rotary split into 10 x 1kg sub samples to maximize representivity of results.</li> <li>Fire assays and repeats were conducted repeated for each 1kg lot.</li> <li>Fines were split into 4 subsamples and fire assayed separately.</li> </ul>
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>	<ul style="list-style-type: none"> <li>Assays were completed in a certified laboratory in Perth WA.</li> <li>The laboratory had its own internal QAQC comprising standards and blanks</li> <li>A number of check samples were sent to a second independent certified laboratory in Perth WA to test for acceptable variability in assaying.</li> </ul>
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>	<ul style="list-style-type: none"> <li>Bulk samples were taken from underground mine ore.</li> <li>Sampling specifically targeted a range of high grade, low grade, oxidized, fresh, sulphide and non-sulphide ore to ensure adequate coverage of ore types from the mine was achieved.</li> <li>Assay data from the numerous sub samples tested was amalgamated for each ore type to establish average grade of ore and waste products. The grade of individual sub samples was found to be variable, reflecting the high gravity gold recoveries typically achieved in processing the ore.</li> </ul>
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> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>Ore samples were taken from the ROM pad at Nicolsons Processing plant corresponding to the mapped development faces.</li> <li>The samples were bulk samples of blasted ore from ongoing mining activity at Nicolsons mine.</li> <li>Each bulk sample was taken from ore known to be mined from different areas in the mine to ensure adequate coverage of all ore types.</li> </ul>

Criteria	JORC Code explanation	Commentary
Data spacing and distribution	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Not applicable to this announcement which only refers to ore sorting.</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Not applicable to this announcement which only refers to ore sorting.</li> </ul>
Sample security	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>Ore samples were bagged in bulka bags on site and sent to the ore sorting facility by truck.</li> <li>Samples were checked by company directors or employees to ensure correct sample identification prior to sorting.</li> </ul>
Audits or reviews	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>Ore sorting was undertaken at the ore sorting vendors facilities. All ore sorting trials were directly supervised and witnessed by Pantoro company directors and the process manager.</li> </ul>

## Compliance Statements

### Ore Sorting Test Work

The information in this report that relates to ore sorting test work is based on information compiled by Mr Paul Cmrlec (B. Eng (Mining) (Hons), a Competent Person who is a Member of the Australian Institute of Mining and Metallurgy. Mr Cmrlec is a Director and full time employee of the company. Mr Cmrlec is eligible to participate in short and long term incentive plans of and holds shares, options and performance rights in the Company as has been previously disclosed. Mr Cmrlec has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Cmrlec consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

### Forward Looking Statements

This announcement may contain forward-looking statements which are identified by words such as 'may', 'could', 'believes', 'estimates', 'targets', 'expects', or 'intends' and other similar words that involve risks and uncertainties. These statements are based on an assessment of present economic and operating conditions, and on a number of assumptions regarding future events and actions that, as at the date of this announcement, are expected to take place. Such forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of Pantoro, the Directors and our management. Pantoro cannot and does not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained in this announcement will actually occur and investors are cautioned not to place undue reliance on these forward-looking statements.