image resources

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60% INCREASE IN ORE TONNES IN ‘PROVED’ CATEGORY ORE RESERVES AT BOONANARRING

Image Resources NL (ASX: IMA) (“Image” or “the Company”) is pleased to announce **a 60% increase in ore tonnes in the ‘proved’ category of Ore Reserves** for its 100%-owned **Boonanarring Minerals Sand Project** located 120 km north of Perth in the **North Perth Basin**.

As part of the process of fast-tracking the development of the **high-grade Boonanarring** project, Image completed grade control drilling in March 2017 designed to increase the confidence level of the Boonanarring Mineral Resources and Ore Reserves. Results of the drilling programme were used by Optiro Pty Ltd (**Optiro**) to complete an update of the Boonanarring Mineral Resources and estimated Ore Reserves for Boonanarring in accordance with the guidelines of the Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves (the **JORC Code - 2012 edition)**.

When compared to the previously estimated Ore Reserves for Boonanarring (as announced on 10 April 2017), the **total tonnes of Proved Ore Reserves have increased by 60% from 5.8 million to 9.3 million tonnes**, albeit at a lower heavy mineral (HM) grade, but importantly at a higher concentration of zircon in the HM as shown in Tables 1 and 2 below.

The significance of the updated Ore Reserves is that Proved Ore Reserves now represents nearly half (47%) of the total Ore Reserves at Boonanarring. It is important to point out that while the total tonnes in the Proved category increased, the overall tonnes of Ore Reserves is largely unchanged.

The updated Ore Reserves for Boonanarring are presented in Table 1. For comparison purposes, the estimated Ore Reserves as at March 2017 are presented in Table 2. Both are reported on Mineral Resources at a cut-off grade of 2.0% total heavy minerals (THM).

Table 1. August 2017 Boonanarring Ore Reserves Summary[1-5]

Classification	Million tonnes	THM %	Slimes %	Oversize %	% of total heavy mineral			
					Zircon	Rutile	Leucoxene	Ilmenite
Strandline mineralisation								
Proved	9.3	8.6	14.3	6.7	23.2	2.2	1.8	48.9
Probable	8.3	6.7	17.1	7.8	23.5	2.5	1.7	51.1
Sub-total	17.6	7.7	15.6	7.2	23.3	2.3	1.7	49.8
Overlying mineralisation								
Probable	2.2	3.0	19.6	6.9	8.9	4.1	2.7	61.8
Sub-total	2.2	3.0	19.6	6.9	8.9	4.1	2.7	61.8
Total								
Proved	9.3	8.6	14.3	6.7	23.2	2.2	1.8	48.9
Probable	10.5	5.9	17.6	7.6	21.9	2.7	1.8	52.3
Total	**19.9**	**7.2**	**16.1**	**7.2**	**22.7**	**2.4**	**1.8**	**50.4**

Table 2. March 2017 Boonanarring Ore Reserves Summary[1-5]

Classification	Million tonnes	THM %	Slimes %	Oversize %	% of total heavy mineral			
					Zircon	Rutile	Leucoxene	Ilmenite
Strandline mineralisation								
Proved	5.8	9.1	14.2	6.6	21.6	2.2	1.9	48.5
Probable	11.9	7.0	16.8	7.8	24.0	2.5	1.6	51.4
Sub-total	17.8	7.7	16.0	7.4	23.0	2.4	1.7	50.3
Overlying mineralisation								
Probable	2.2	3.0	20.3	7.3	8.6	4.1	2.7	61.8
Sub-total	2.2	3.0	20.3	7.3	8.6	4.1	2.7	61.8
Total								
Proved	5.8	9.1	14.2	6.6	21.6	2.2	1.9	48.5
Probable	14.2	6.4	17.4	7.7	22.8	2.6	1.7	52.2
Total	**20.0**	**7.2**	**16.5**	**7.4**	**22.4**	**2.4**	**1.8**	**50.8**

Table notes:

1. *Ore Reserves are based upon a cut-off grade of 2% total heavy minerals (THM) and resource materials in domain 11 containing less than 6% zircon have been excluded from the Ore Reserve estimation.*
2. *The Ore Reserves are based upon an FX rate US$0.73:A$1.00; and the following commodity prices: ilmenite - $US144, leucoxene - $US522, rutile - $US936 and zircon - $US1,126.*
3. *Mineral Resources have been reported as inclusive of Ore Reserves.*
4. *The mineral assemblage is reported as a percentage of in-situ THM content.*
5. *Tonnes and grade data have been rounded to one significant figure. Discrepancies in summations may occur due to rounding.*

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COMPLIANCE STATEMENT

The information in this report that relates to the estimation of Mineral Resources is based on information compiled by Mrs Christine Standing, who is a Member of the Australasian Institute of Mining and Metallurgy (AusIMM) and the Australian Institute of Geoscientists (AIG). Mrs Standing is a full-time employee of Optiro Pty Ltd and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which she is 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'. Mrs Standing consents to the inclusion in this report of the matters based on her information in the form and context in which it appears.

The Ore Reserves statement has been compiled in accordance with the guidelines of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code – 2012 Edition). The Ore Reserves have been compiled by Jarrod Pye, Mining Engineer and full-time employee of Image Resources, under the direction of Andrew Law of Optiro, who is a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Law has sufficient experience in Ore Reserves estimation relevant to the style of mineralisation and type of deposit under consideration to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves". Mr Law consents to the inclusion in the report of the matters compiled by him in the form and context in which it appears.

JORC CODE TABLE 1 CRITERIA

The table below summaries the assessment and reporting criteria used for the Atlas Project Mineral Resource and Ore Reserve estimates and reflects the guidelines in Table 1 of The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2012).

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling. These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.*	• Sampling of the deposit has been by vertical reverse-circulation air-core method (RCAC). This is a Mineral sands industry-standard drilling technique. • Samples are from intervals of 0.5 m, 0.7 m, 1 m and 1.5 m and 2 m. The majority of samples (almost 98%) are from intervals of 1 m. • 11 vertical diamond core holes were drilled in 2016 to obtain geotechnical and bulk density data.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• All Image RCAC drillholes are drilled vertically using an NQ-sized (76 mm diameter) drill bit. • All Iluka RCAC drillholes are vertical and were drilled using a BQ-sized drill bit (60 mm diameter). • Water injection is used to convert the sample to a slurry so it can be incrementally sampled by a rotary splitter. • 20 vertical diamond core holes were drilled in 2016 using a PQ sized drill bit (85 mm) diameter).
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• At the drill site, Image's geologist estimates sample recovery qualitatively (as good, moderate or poor) for each 1 m down hole sampling interval. Specifically, the supervising geologist visually estimates the volume recovered to sample and reject bags based on prior experience as to what constitutes good recovery. • Image has recorded that over 90% of the samples have good recovery and that less than 5% have moderate recovery and less than 5% have poor recovery. • Image also monitors recovery through the mass of the laboratory sample, which is recorded prior to despatch and again on delivery to the laboratory. The mass variation in the laboratory samples can then be correlated back to the original total sample.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• Image's supervising geologist logs the sample reject material at the rig and pans a small sub-sample of the reject, to visually estimate the proportions of sands, heavy mineral (HM) sands, 'slimes' (clays), and oversize (rock chips) in each sample, in a semi-quantitative manner. • The geologist also logs colour, grain size, an estimate of induration (a hardness estimate) and sample 'washability' (ease of separation of slimes from sands by manual attrition). • To preclude data entry and transcription errors, the logging data is captured into a digital data logger at the rig, which contains pre-set logging codes. • No photographs of samples are taken.

		• The digital logs are downloaded daily and emailed to Image's head office for data security and compilation into the main database server. • Samples visually estimated by the geologist to contain more than 0.5% HM (by weight) are despatched for analysis along with the 1 m intervals above and below the mineralised interval. • The level and detail of logging is of sufficient quality to support Mineral Resource estimates. • All (100%) of the drilling is logged. • Geotechnical holes have been logged and assessments as to pit stability determined.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• The majority of the samples (almost 98%) are from 1 m intervals and almost 42% of samples were analysed for total HM, slimes and oversize. • The sample from the internal RC rods is directed to a cyclone and then through a 'rotating-chute' custom-built splitting device. This device allows different fraction splits from the cyclone sample stream to be directed to either 25 cm by 35 cm calico bags (as the laboratory despatch samples) or to large plastic polyweave bags for the sample rejects. The rotary splitter directs ≈10 increments from the stream to the laboratory despatch samples, for a specified sampling interval. • Sample tickets with the interval's unique sample ID are placed in each bag. • For resource definition drilling, two (replicate) 1/8 mass splits (each ≈ 1.25 kg) are collected from the rotary splitter into two pre-numbered calico bags for each 1 m down hole interval. A selection of the replicate samples are later collected and analysed to quantify field sampling precision, or as samples contributing to potential future metallurgical composites. • Iluka is understood to have used a similar procedure albeit no records are available to support this assertion. • To monitor sample representation and sample number correctness, Image weighs the laboratory despatch samples prior to despatch. The laboratory then weighs the received sample and reports the mass to Image. This identifies any potential mix up of sample numbers and is also a proxy for sample recovery. • Image considers the nature, quality and size of the sub samples collected are consistent with best industry practices of mineral sands explorers in the Perth Basin region.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks)*	• Image and Iluka used industry standard approaches to estimating the contents of HM, slimes and oversize involving screening to remove oversize, washing slimes from samples and then extracting the heavy minerals from the residual sands using heavy media. • Image engaged four laboratories (Western Geolabs, Diamantina Laboratory, Diamond Recovery Services Laboratory and Robbins Metallurgical Laboratory). • Iluka used a few certified reference materials (CRMs) to quantify the accuracy of the drilling with acceptable results. Image inserted CRMs for drilling undertaken during 2014, 2015, 2016 and 2017. • Both Iluka and Image collected duplicate samples including

	and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	field-duplicates of the primary sample, laboratory duplicates at the laboratory sub-sampling stage (post de-sliming) and laboratory re-submission duplicates to the original or alternative laboratories used by Iluka and/or Image. • Analysis of QAQC data for the drilling programs indicates that it is of moderate to high quality and supports Mineral Resource estimation. • Three sets of mineral assemblage data have been used to estimate the ilmenite, leucoxene, rutile and zircon concentrations within the HM: – data from Iluka (magnetic separation followed by density separation using solutions of 3.85 g/cm^3 and 4.05 g/cm^3) – XRF data (after microscope examination to exclude non-representative samples e.g. laterite) – QEMSCAN data.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Image drilled a number of twin holes (within 10 m of Iluka holes). The twin holes compare favourably for HM and slimes grades. Oversize grades could not be compared as Image and Iluka use different size thresholds for oversize. • Image collected primary data on hard copy logs and also used a data logger. Data from laboratories was provided in digital form and compiled in Microsoft Access databases and spreadsheets. • Almost 46% of the assayed intervals have been analysed using a <53 µm grain size for slimes and a -710µm+53µm grain size for HM, and almost 54% of the data has been analysed using a <63 µm grain size for slimes and a -1mm+63um grain size for HM. Less than 2% of the HM data is from a grain size fraction of -1mm+53µm. Grain size analysis was used to generate adjustment factors that have been applied to convert the +53 µm HM data to +63 µm HM data and to convert the -53 µm slimes data to -63 µm slimes data. • Grain size analysis indicates that the zircon and TiO_2 minerals are all ≤850 µm. • Results from QEMSCAN analysis of 20 composite samples, originally analysed using XRF, were used to calibrate the results from XRF with the QEMSCAN results.
Location of data points	• *Accuracy and quality of surveys used to locate drillholes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• Drillhole collars at Boonanarring have been surveyed using hand-held DGPS and RTK DGPS methods, with the latter method deemed most accurate. • The collar coordinates and survey ground controls have been tied to the Landgate GOLA database by a registered surveyor. • All collars for the Mineral Resource estimate have been adjusted to a LiDAR topographic model described below. • Data for Boonanarring has been surveyed in MGA Zone 50 GDA94. The Mineral Resource has been estimated in a local grid system based on a two-point transformation. This transformation has been validated by Image's survey contractor. • The topographic model for Boonanarring is based on LiDAR survey. A review of this survey by Image's survey contractor revealed that the survey had an incorrect vertical datum; elevations are 0.3 m higher than measured at collars using RTK DGPS. The corrected LiDAR surface was used to constrain the Mineral Resource model.

Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• The drillhole spacing is generally 20 m to 40 m across strike on section lines spaced at 100 m or 200 m along strike. The year 1 pit area has been infilled to a spacing of 20 m on 75 m spaced sections. Some areas have been drilled at a wider spacing of up to 80 m by 400 m. • The drill database used in the resource estimate comprises 1,621 drillholes for a total 67,072.5 m drilled by Image and Iluka between 1998 and 2017. • Samples for HM assemblage determination were composited on intervals according to a combination of grade and geology appropriate to reflect resource estimation domains. 289 composites from 569 holes totalling 3,799 m were used in the Mineral Resource estimate. • The data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource estimation procedure and classification applied.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• All drillholes are vertical and intersect sub-horizontal strata. This is appropriate for the orientation of the mineralisation and will not have introduced a bias.
Sample security	• *The measures taken to ensure sample security.*	• All samples are collected from site by Image's staff as soon as practicable once drilling is completed and then delivered to Image's locked storage sheds. • Image's staff deliver samples to the laboratory and collect heavy mineral floats from the laboratory, which are also stored in Image's locked storage. • Image considers there is negligible risk of deliberate or accidental contamination of samples. Occasional sample mix-ups are corrected using Images checking and quality control procedures.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• The results and logging have been reviewed internally by Image's senior exploration personnel including checking of masses despatched and delivered, checking of CRM results, and verification logging of significant intercepts. • The database, sampling procedures and documentation were reviewed by Harlequin Consulting Pty Ltd in 2015. • In April 2013, CSA Global audited Robbins Metallurgical Laboratory and found the laboratory practices acceptable to support results for Mineral Resource estimation

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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	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• The Boonanarring deposit is within mining leases M70/1194 (expiry 15/12/2026) and M70/1311 (expiry 11/03/2034), exploration licence E70/3041 (expiry 9/06/2018) and general purpose licence G70/250 (expiry 7/05/2034). Image has a 100% interest in each of these licences. • M70/1311 abuts Bartlett's Well and Boonanarring Nature Reserves and Image has allowed for a 50 m buffer zone (of no mining activity) adjacent to these reserves.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• The Boonanarring deposit was discovered by Iluka, who drilled out the central area to a Measured Resource status. The work is well documented in reports from Iluka, prior Mineral Resource estimators McDonald Speijers (2005) and Widenbar and Associates (2013), and Harlequin Consulting Pty Ltd (2014 and 2015).
Geology	• *Deposit type, geological setting and style of mineralisation.*	• Boonanarring is hosted in the Perth Basin, in the Pleistocene Yoganup Formation on the eastern margin of the Swan Coastal Plain. • The Yoganup Formation is a buried pro-graded shoreline deposit, with dunes, beach ridge and deltaic facies. This formation lies unconformably over the Lower Cretaceous Leederville Formation and is overlain by the Pleistocene Guildford Formation and the Quaternary Bassendean Sand. • The Yoganup Formation consists of unconsolidated poorly sorted sands and gravels, with local interstitial clay and heavy minerals that occur sporadically along the Gingin Scarp, which is interpreted to be an ancient shoreline that was stable during a period of marine regression. • Boonanarring has three major strandlines of heavy minerals, which are interpreted to have been deposited during the Pleistocene in a notch in the local basement rock that may represent an ancient sea cliff. Lower grade mineralisation is present in the sands overlying the higher-grade strandlines. • The basement to the strandline mineralisation is identified by the increased slimes content of the Leederville Formation or at the base of the Yoganup Formation. Mineralisation within this has high zircon concentrations.
Drillhole information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:* ○ *easting and northing of the drillhole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drillhole collar* ○ *dip and azimuth of the hole*	• Not relevant – Mineral Resource defined. Exploration results are not being reported for the Mineral Resource area.

	○ *down hole length and interception depth* ○ *hole length.*	
Data aggregation methods	• *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.* • *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.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• Not relevant – Mineral Resource defined. Exploration results are not being reported for the Mineral Resource area. • There are no metal equivalent values assumptions applied in the Mineral Resource reporting.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drillhole angle is known, its nature should be reported.*	• The geometry of the Boonanarring mineralisation is effectively horizontal and the vertical drillholes used to define the Mineral Resource give the approximate true thicknesses of mineralisation.
Diagrams	• *Appropriate maps and sections and tabulations of intercepts should be included for any significant discovery being reported*	• Refer to diagrams in report
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• Not relevant – Mineral Resource defined. Exploration results are not being reported for the Mineral Resource area.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Slimes and HM grain size analysis reported under "Verification of sampling and assaying". • Bulk density and geotechnical work reported under "Bulk Density" and "Logging". • Metallurgical test results of bulk samples reported under "Metallurgical factors or assumptions".
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• 2.5 km of under-explored ground separates the updated Boonanarring deposit from the Gingin North deposit. Image is negotiating with landowners in the area to gain access for the purpose of testing this ground. Further work is planned directly east of the Gingin North deposit where magnetic targets have been delineated. Permission to access currently being sought. This has the potential to extend the Boonanarring Mineral Resource a further 4.5 km south. • Extensions to the north will be assessed by further drilling programmes for the potential of a 5 km extension north of the

		current Boonanarring Mineral Resource. As previously announced (25th March 2015 and 13th July 2015) this extension was identified from mineralisation intersected by drilling over a distance of 1.6 km and further confirmed with roadside drilling over a distance of 5.6km as announced 26th June 2017.

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	• *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.* • *Data validation procedures used.*	• The drillhole database is managed by Image and has been compiled by CSA from Image's internal databases and from databases provided by Iluka. Maintenance of the database includes internal data validation protocols by Image. • Harlequin Consulting Pty Ltd completed a high level review of the database in 2014 and found the method of construction of the database and validation procedures are acceptable and that the data is acceptable for Mineral Resource estimation. • For the Mineral Resource estimate the drillhole data was extracted directly from the CSA drillhole database. • Data was further verified and validated by Optiro using mining software (Datamine) validation protocols, and visually in plan and section views.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	• Mrs Christine Standing (CP for the Mineral Resource estimate) visited the Boonanarring deposit during December 2016. • The sites of the geotechnical drillholes and exclusion zones for reporting of the Mineral Resources were inspected.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• Two stratigraphic (Yoganup and Leederville Formations) units within the deposit area were defined using a combination of slimes and oversize data and drillhole lithological logs. • For the purposes of resource estimation, these units were used in combination with grade criteria to define four mineralised domains, as follows: – main strandlines: within Yoganup Fm., grade criteria >2% HM – western strandline: within Yoganup Fm., grade criteria >2% HM – below main strandlines: within Leederville Fm or at base of Yoganup Fm., grade criteria >2% HM – mineralisation overlying the main strandlines, within Yoganup Fm., grade criteria >1.8% HM. • There is good confidence in the geological interpretation of the main strandlines. Confidence in the other three domains is lower, as reflected by the classification.
Dimensions	• *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.*	• The mineralisation within the two main strandlines has been shown from drilling to extend for approximately 13.2 km north/south and has a combined across strike width of up to 500 m. The strandline mineralisation extends from 14 m to 58 m depth. The mineralisation below the main strandline extends from a depth of 20 m to 61 m and the overlying, lower grade mineralisation extends from surface to a depth of 39 m. • The western strandline has been shown from drilling to extend for approximately 4 km north/south and has an across strike

		width of up to 200 m. The mineralisation extends from 11 m to 35 m depth.
Estimation and modelling techniques	• *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.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drillhole data, and use of reconciliation data if available.*	• Datamine resource estimation software was used to create a geological model and define the mineralisation envelopes. A series of mineralised domains was used to constrain the Mineral Resource estimate. • Wireframe interpretations of mineralisation were made by Optiro based on geological logging and HM content, using thresholds of ~1.8% HM to define the overlying mineralisation and 2% HM to define the strandline mineralisation. • Optiro assessed the robustness of these domains by critically examining the geological interpretation and by using a variety of measures, including statistical and geostatistical analysis. The domains are considered geologically robust in the context of the resource classification applied to the estimate. • Drillhole sample data was flagged from the three-dimensional interpretation of the mineralised horizons. • Samples are from intervals of 0.5 m, 0.7 m, 1 m and 1.5 m and 2 m. As the majority of samples (almost 98%) are from intervals of 1 m the data was composited to 1 m downhole intervals for resource estimation. • Extrapolation of up to 50 m along strike and approximately half the drill spacing across strike was used for the interpretation. • HM, slimes and oversize quantities were estimated using ordinary kriging (OK) into blocks of 10 mE by 50 mN by 1 mRL. • Zircon, leucoxene, rutile and ilmenite (VHM components) percentages within the HM fraction were estimated using inverse distance (ID) into the parent blocks. • Block dimensions were selected from kriging neighbourhood analysis and reflect the variability of the deposit and the model's practicality for future mine planning. Sub-cells to a minimum dimension of 2.5 mE by 12.5 mN by 0.5 mRL were used to represent volume. • Drillholes are generally spaced at 20 m on-section on lines that are 100 m and 200 m apart with areas drilled at a spacing of up to 80 m by 400 m. Within the year 1 pit area, infill drilling has reduced the spacing to 20 m on 75 m sections • Data analysis and estimation was undertaken using Snowden Supervisor and Datamine software. • All variables were estimated separately and independently. • Hard boundaries were applied to the estimation of HM, slimes and oversize and the VHM components within the mineralisation domains. • Grade capping was applied to HM%, slimes% and oversize%. The top cut levels were determined using a combination of top cut analysis tools, including grade histograms, log probability plots and the coefficient of variation. • Variogram analysis was undertaken to determine the kriging estimation parameters used for OK estimation of HM, slimes and oversize and the search dimensions used for ID estimation of the VHM components. • HM mineralisation continuity was interpreted from variogram

		analyses to have an along strike range of 1,140 m and an across strike range of 38 m within the main strandlines. Within the other mineralised domains along strike continuity has ranges of 480 m to 880 m and across strike ranges of 42 m to 90 m. • The VHM continuity was interpreted from variogram analyses to have an along strike range of 1,400 m and an across strike range of 110 m within the main strandline. Ranges of 800 m by 130 m were interpreted for the upper mineralisation and ranges of 600 m by 75 m were interpreted for the mineralisation below the main strandlines. • The results from the kriging neighbourhood analysis in January 2017 were used to determine the block size, sample numbers and discretisation levels. • Three estimation passes were used for HM; the first search was based upon the variogram ranges; the second search was the same as the initial search with reduced sample numbers required for estimation and the third search was up to four times the initial search for the main and western strandlines and upper mineralisation. For the mineralisation below the main strandline the third search was up to 8 times the initial search. The majority of blocks (93%) were estimated in the first pass, 5% in the second pass and 2% in the third pass. • The HM, slimes and oversize estimated block model grades were visually validated against the input drillhole data and comparisons were carried out against the declustered drillhole data and by northing, easting and elevation slices. • The VHM estimated block model grades were visually validated against the input drillhole data and comparisons were carried out against the drillhole data and by northing and easting slices.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• Tonnages are estimated on a dry basis.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• The Mineral Resource estimate for the Boonanarring deposit has been reported at a 2.0% HM cut-off. This cut-off grade was selected by Image based on technical and economic assessment carried out during Feasibility Studies.
Mining factors or assumptions	• *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 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.*	• Open pit mining methods will be used, similar to those commonly and currently in use in HM mining operations both in Australia and globally. • Image has assumed mining by conventional truck and shovels, with dozers used to improve vertical selectivity.

Metallurgical 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.*	• Mineral assemblage data within the Mineral Resource estimate has been sourced from three different assemblage programs: – data from Iluka (magnetic separation followed by density separation using solutions of 3.85 g/cm^3 and 4.05 g/cm^3) – XRF data (after microscope examination to exclude non-representative samples e.g. laterite) – QEMSCAN data. • Results from QEMSCAN analysis of 20 composite samples, originally analysed using XRF, were used to calibrate the results from XRF with the QEMSCAN results. • The QEMSCAN rules for the titanium mineral determination are as follows: – Ilmenite: 50-70% TiO_2 – Leucoxene: 70-95% TiO_2 – Rutile: >95% TiO_2 • Process metallurgical studies of bulk samples from Boonanarring were undertaken in 2013, 2015 and 2016 for the purpose of developing a process flowsheet for the deposit. The results from this work are sufficient for Image to expect that the Boonanarring mineralisation will be amenable to treatment with conventional mineral sands processing techniques. • Image considers there are no metallurgical factors which are likely to affect the assumption that the deposit has reasonable prospects for eventual economic extraction.
Environmental factors or assumptions	• *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.*	• Environmental exclusion zones, within 50 m of the Bartlett's Well and Boonanarring Nature Reserves, have been defined and these areas are excluded from the reported Mineral Resource.
Bulk density	• *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.* • *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.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• 19 bulk density measurements were made during the 2016 geotechnical drilling program. • Bulk density values were estimated from an industry-standard formula which accounts for the HM and slimes content of heavy mineral sand deposits. The formula was calibrated with the 2016 data for estimation of the bulk density for the January 2017 Mineral Resource estimate. • The calibrated density formula was used for bulk density estimation for the July 2017 Mineral Resource estimate.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *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*	• The estimate has been classified according to the guidelines of the JORC Code (2012), into Measured, Indicated and Inferred Resources taking into account data quality, data density, geological continuity, grade continuity and confidence in estimation of heavy mineral content and mineral assemblage. In plan, polygons were used to define zones of different classification within each of the mineralised domains. – Measured Mineral Resources are defined within the

	metal values, quality, quantity and distribution of the data). • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	year 1 pit area, where the drill spacing is at 20 m on 75 m spaced sections, and are defined along strike of this where drilling is at 20m to 40 m on 100 m spaced section lines and where there is good coverage of mineral assemblage data – Indicated Resources are generally defined where drilling is at 20 m to 40 m by 200 m. – Inferred Resources are defined where the drill spacing is up to 80 m by 400 m. In addition, Inferred Resources are defined for blocks with HM grades estimated by the third search.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• The Mineral Resource has been reviewed internally as part of normal validation processes by Optiro. • No external audit or review of the current Mineral Resource has been conducted.
Discussion of relative accuracy/ confidence	• *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.* • *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.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• The assigned classification of Measured, Indicated and Inferred reflects the Competent Persons' assessment of the accuracy and confidence levels in the Mineral Resource estimate. • The confidence levels reflect production volumes on a monthly basis. • No production has occurred from the deposit.

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 estimate for conversion to Ore Reserves	*Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*	The Mineral Resource estimate used is classified as JORC 2012 Mineral Resource statement as per Image Resources Ltd, the Boonanarring Project Mineral Resource estimate was completed by Christine Standing of Optiro Pty Ltd. The Mineral Resources are reported inclusive of the Ore Reserves.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* *If no site visits have been undertaken indicate why this is the case.*	Site visit undertaken in December 2016 by Andrew Law of Optiro Pty Ltd (the Competent Person for Estimation and Reporting of Ore Reserves) with the purpose of the visit being to assess requirements for evaluating the updated reserve.
Study status	*The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.*	Image Resources completed a Pre-feasibility study in 2013

Criteria	JORC Code explanation	Commentary
	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.	Image Resources have completed an updated feasibility study as of May 2017.
Cut-off parameters	*The basis of the cut-off grade(s) or quality parameters applied.*	The cut-off grade in the case of Boonanaring has been calculated using spreadsheets and an individual cut-off grade applied to each block within the model. The calculations consider, among other considerations, individual mineral and product values, operating costs and other practical considerations (including ore and overburden variabilities) and HM and product recoveries.
Mining factors or assumptions	*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).* *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* *The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.* *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).* *The mining dilution factors used.* *The mining recovery factors used.* *Any minimum mining widths used.* *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.* *The infrastructure requirements of the selected mining methods.*	The truck and shovel method has been chosen for the mining of the Boonanarring project. The truck and shovel method is used in similar operations in Australia. Appropriate factors have been applied to the Mineral Resource by optimization and design to derive the Ore Reserves. The choice of the truck and shovel method was deemed appropriate due to the ore thickness, access, and nature of the geology. Similar mining methods were also used in the geographical area, such as Iluka's Gingin deposit Due to the depth of the Boonanarring deposit a geotechnical study was conducted by SRK Consulting. A total of 11 holes were drilled to depths of 60m. Eastern walls will be approximately 32deg and western walls 38deg Mining dilution (2%) and recovery factors (100%) are assumptions made for similar mining operations and mining techniques. Reconciliations from previous operations to date have supported these assumptions. Grade control will be conducted by a geologist in pit using panning to establish ore contacts, in conjunction with Survey who also be used to stake our ore surfaces. Inferred resources were not used in the Ore Reserve output. However will be used in an operations schedule for internal production purposes. Infrastructure required will be office blocks, mining contractor workshop and associated facilities.

Criteria	JORC Code explanation	Commentary
Metallurgical factors or assumptions	*The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* *Whether the metallurgical process is well-tested technology or novel in nature.* *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* *Any assumptions or allowances made for deleterious elements.* *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.* *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*	The ore is processed through a wet concentration plant (WCP) to produce a Heavy Mineral Concentrate (HMC) which is further processed at an offsite Mineral Separation Plant (MSP) to generate final products. The WCP and MSP use traditional mineral sands separation techniques. The metallurgical process and appropriateness of the process is outlined in a process map by Image and is detailed in the Ore Reserve document. The process has been widely utilised in similar operations. The Metallurgical process is well tested and commonly used in similar operations worldwide. Deleterious materials include oversize material and clay fines which will be managed as part of Image's rehabilitation management plan and mildly radioactive material, which will be returned into the pit as backfill and capped. The Ore Reserve estimation has been based on the recoveries and processes outlined above which are well tested, and established as being appropriate for similar metallurgical specifications. Yes, mine planning filters and metallurgical recovery through to final the products.
Environmental	*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.*	Mining and general purpose lease, Part IV Environmental protection act – PER, EPBC Act, Land owner agreements and groundwater abstraction licence have all been granted. Secondary approvals such as Project management plan, Works approval and mining proposal have been submitted and are waiting for approval.
Infrastructure	*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.*	Image has exercised an option to purchase 550 Ha of land situated over a key area of the deposit Image owns a WCP, Slurry mining unit (SMU), pipes, pumps and power infrastructure for mining at Boonanarring Labour is likely to be acquired from the local area and surrounds.
Costs	*The derivation of, or assumptions made, regarding projected capital costs in the study.* *The methodology used to estimate operating costs.*	Projected capital costs relate to sustaining capital only and are considered appropriate. Operating history (Murray Zircon's Mindarie project) and Pre-Feasibility Study in combination with offtake agreements in place for sale of various commodities produced at Boonanaring, at varied proportions of

Criteria	JORC Code explanation	Commentary
	Allowances made for the content of deleterious elements. *The source of exchange rates used in the study.* *Derivation of transportation charges.* *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* *The allowances made for royalties' payable, both Government and private.*	product volume provide adequate coverage for the estimation of operating costs. For the purpose of the Reserve financial calculations, the contract prices are commercially sensitive. Product specifications deals with deleterious elements. Long term exchange rates of A$0.73 were sourced from Azure Transportation charges reflect contract quotes with service providers. The transportation charges are included in the selling costs. The selling costs include provision for bagging, handling, transport to port, and port costs. All product prices have been derived on an FOB basis and as such shipping prices have not been included. Third party processing costs reflect contracted rates Allowances made for royalties include a 5.0% revenue royalty. There will be no land owner payments as Image intends to purchase all the land
Revenue factors	*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.* *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*	Azure have provided a pricing range for each of the products which Image have used. Product revenue for the zircon concentrate product is calculated using Azure long term prices adjusted for zircon quality and other factors contained in the offtake agreement for this product. Product revenue for all other products is calculated using Azure's long term prices adjusted for content, product quality and other factors, as well as the company's expectations.
Market assessment	*The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* *A customer and competitor analysis along with the identification of likely market windows for the product.* *Price and volume forecasts and the basis for these forecasts.* *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	Market analysis is based on independent reports and IMA marketing activities, with demand for mineral sands typically following global GDP. IMA produces Zircon and TiO_2 products which are forecast to be in relative short supply in the medium term. At current production rates, final products of Zircon expected to average – 40 ktpa (dry). Ilmenite – 100 ktpa (dry) Offtake agreement for 90% of Zircon at market price. Other products still to be marketed
Economic	*The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of*	To demonstrate the Ore Reserve is economic it has been evaluated through a high level financial model. This process has demonstrated the Ore Reserve generates positive cash flows above the cut-off grade.

Criteria	JORC Code explanation	Commentary
	these economic inputs including estimated inflation, discount rate, etc. *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	Economic assumptions with respect to product pricing and operating costs are described above.
Social	*The status of agreements with key stakeholders and matters leading to social licence to operate.*	Agreements are in place with all current relevant stakeholders and negotiations are well advanced with those identified as high probability of needing agreements to be in place. IMA has a comprehensive community engagement program.
Other	*To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* *Any identified material naturally occurring risks.* *The status of material legal agreements and marketing arrangements.* *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government 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.*	No identifiable naturally occurring risks have been identified to impact the Ore Reserves. A 90% Zircon offtake agreement is in place Secondary approvals such as Project management plan, Works approval and mining proposal are 90% complete to date.
Classification	*The basis for the classification of the Ore Reserves into varying confidence categories.* *Whether the result appropriately reflects the Competent Person's view of the deposit.* *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	Mineral Resources converted to Ore Reserves as per JORC 2012 guidelines, i.e. Measured to Proven, Indicated to Probable. No downgrading in category has occurred for this project. No Inferred category material used or reported. The result reflects the Competent Person's view of the deposit. There is no portion of "probable" Ore reserves derived from Measured Mineral Resources.
Audits or reviews	*The results of any audits or reviews of Ore Reserve estimates.*	The Ore Reserve has been calculated by Image with Independent consultants Optiro Pty Ltd providing the relevant direction and providing CP signing off on the Ore Reserve.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed*	The level of accuracy for the Ore Reserve is determined largely by the Mineral Resources model, the metallurgical assumptions as well as long term revenue and cost assumptions.

Criteria	JORC Code explanation	Commentary
	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. *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.* *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.* *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.*	Boonanarring is a new operation and as such insufficient production data exists to enable a full statistical reconciliation at this stage.