

# IND ESTABLISHES HPQ EXPLORATION TARGET AT PIPPINGARRA PROJECT

## Highlights

- IND's recent RC drilling program informs a Maiden High Purity Quartz (HPQ) Exploration Target at the Pippingarra Quarry Project.
- Drilling is planned for the exploration target area and to test several quartz occurrences mapped across the wider Mining Lease area.
- IND plans to commence work on a HPQ Mineral Resource Estimate in parallel with metallurgical testwork being conducted by potential offtake partners and third-party mineral processing laboratories.
- A 300kg Pippingarra quartz sample crushed from existing quarry stockpiles sent to China in late 2023 produced a >99.994% SiO<sub>2</sub> end product following standard HPQ processing<sup>1</sup>.
- A further 24 tonne bulk sample comprising crushed quartz rock has been shipped to China for processing, metallurgical test work, and assessment by potential offtake partners.

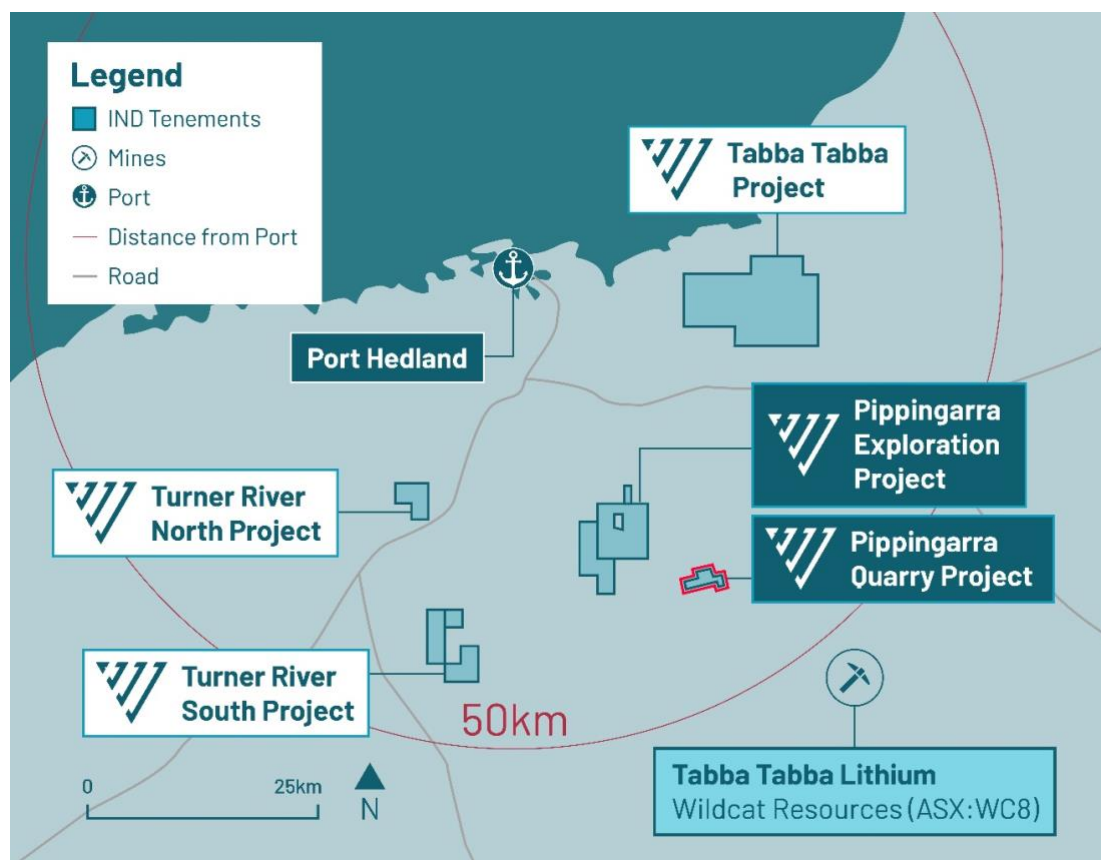


Figure 1: IND Pippingarra Quarry Project location and infrastructure.

<sup>1</sup> For further details on HPQ processing and results, refer to ASX announcement dated 28th March 2024.

Industrial Minerals Ltd (ASX: **IND** or the **Company**) is pleased to announce a Maiden Exploration Target for High Purity Quartz (**HPQ**) at its Pippingarra Quarry Project (**Pippingarra**) located 30km south-east of Port Hedland, in the Pilbara region of Western Australia (Figure 1).

In October 2023, IND announced the agreement of binding terms<sup>2</sup> with North West Quarries Pty Ltd (**NWQ**) for an exclusive option to acquire an 80% interest in the non-construction material mineral rights.

**Jeff Sweet, Managing Director of Industrial Minerals, commented:**

*“Following on from one of our potential offtake partners in China achieving a processed High Purity Quartz product grading >99.994% SiO<sub>2</sub>, we are extremely positive about the potential to supply Pippingarra quartz into high-end quartz markets.*

*“The Pippingarra Exploration Target is limited to an area where IND completed RC drilling in late 2023, to the east of the existing open pit. There are several quartz outcrops mapped across the broader Mining Lease area that will also be drilled with the intention to include these untested HPQ target opportunities in the upcoming Mineral Resource Estimate (MRE) for Pippingarra.*

*“Our motivation to commence work towards a MRE is to leverage our unique position of having an active mining operation at the Pippingarra Quarry. We believe this will give potential offtake partners the confidence to enter into offtake agreements with IND, knowing that we can rapidly advance to be mine ready and have a suitable mine life to support long term supply needs.”*

## Maiden High Purity Quartz Exploration Target

**Table 1:** Pippingarra HPQ Exploration Target range.

Pippingarra HPQ Exploration Target – April 2024		
	Lower Range	Upper Range
Quantity (Tonnes)	<b>1.5M</b>	<b>3M</b>
Grade (SiO <sub>2</sub> )	<b>97%</b>	<b>99%</b>

***The potential quantity and grade of the Exploration Target is conceptual in nature, and there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource. The Exploration Target has been prepared and reported in accordance with the 2012 edition of the JORC Code.***

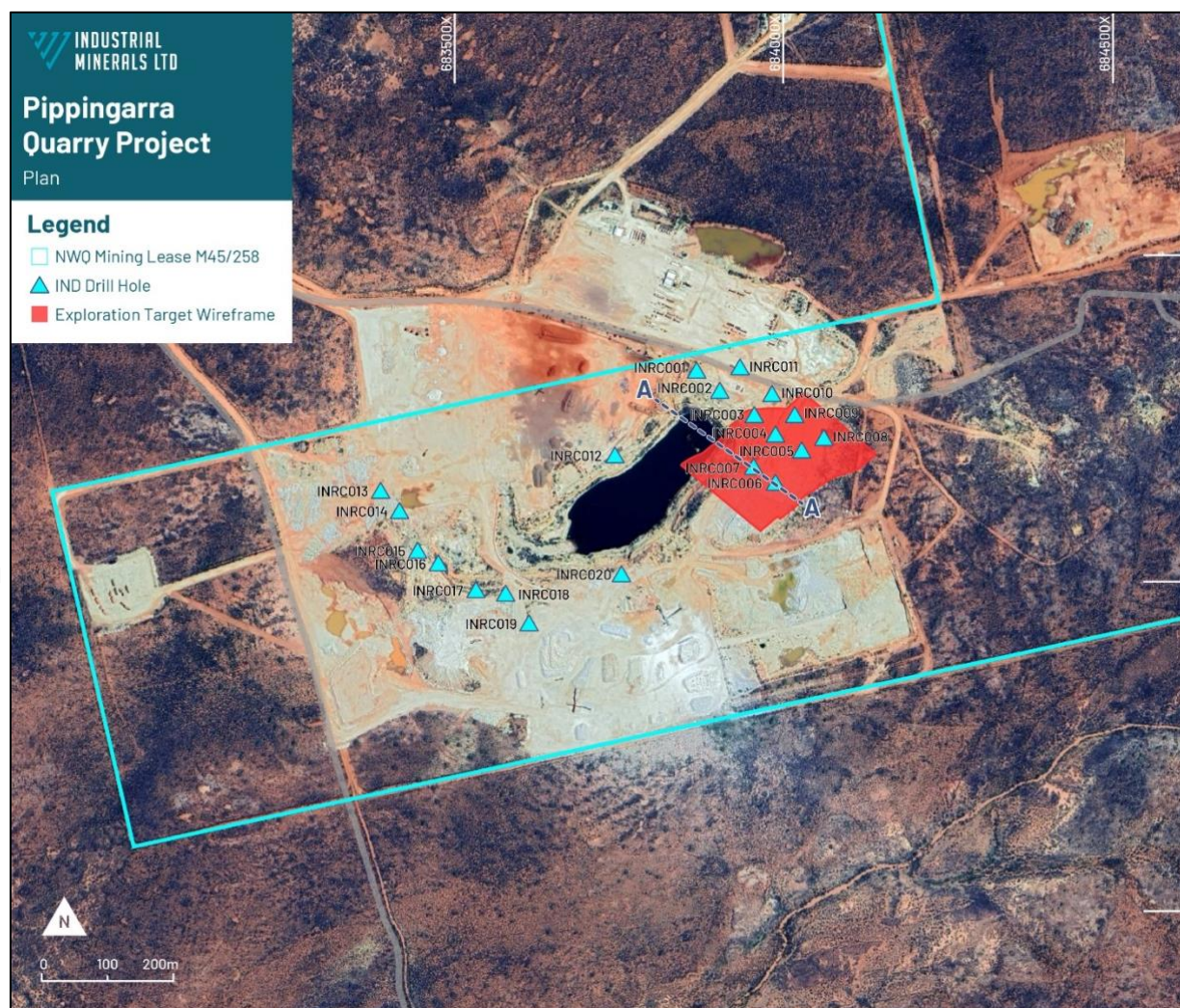
The Exploration Target is based upon the Reverse Circulation (**RC**) Drilling program completed by IND in December 2023. Drilling was conducted on a 50m x 50m spacing. From this, holes INRC003 – INRC009 recorded thicknesses of white crystalline quartz over widths from 12m to 20m as reported in the Table 2 below.

<sup>2</sup> For further details on the Pippingarra Quarry Project option agreement and historical drilling results, refer to ASX announcement dated 27th October 2023.

In addition to the distinct and well-defined quartz unit, there is also pervasive “free” coarse grained quartz crystals throughout the K-feldspar rich pegmatite units which form a significant part of the Pippingarra pegmatite and have been observed to comprise more than 30% quartz. These feldspar - quartz rich pegmatite zones also contribute to the overall quartz resource within the Exploration Target area.

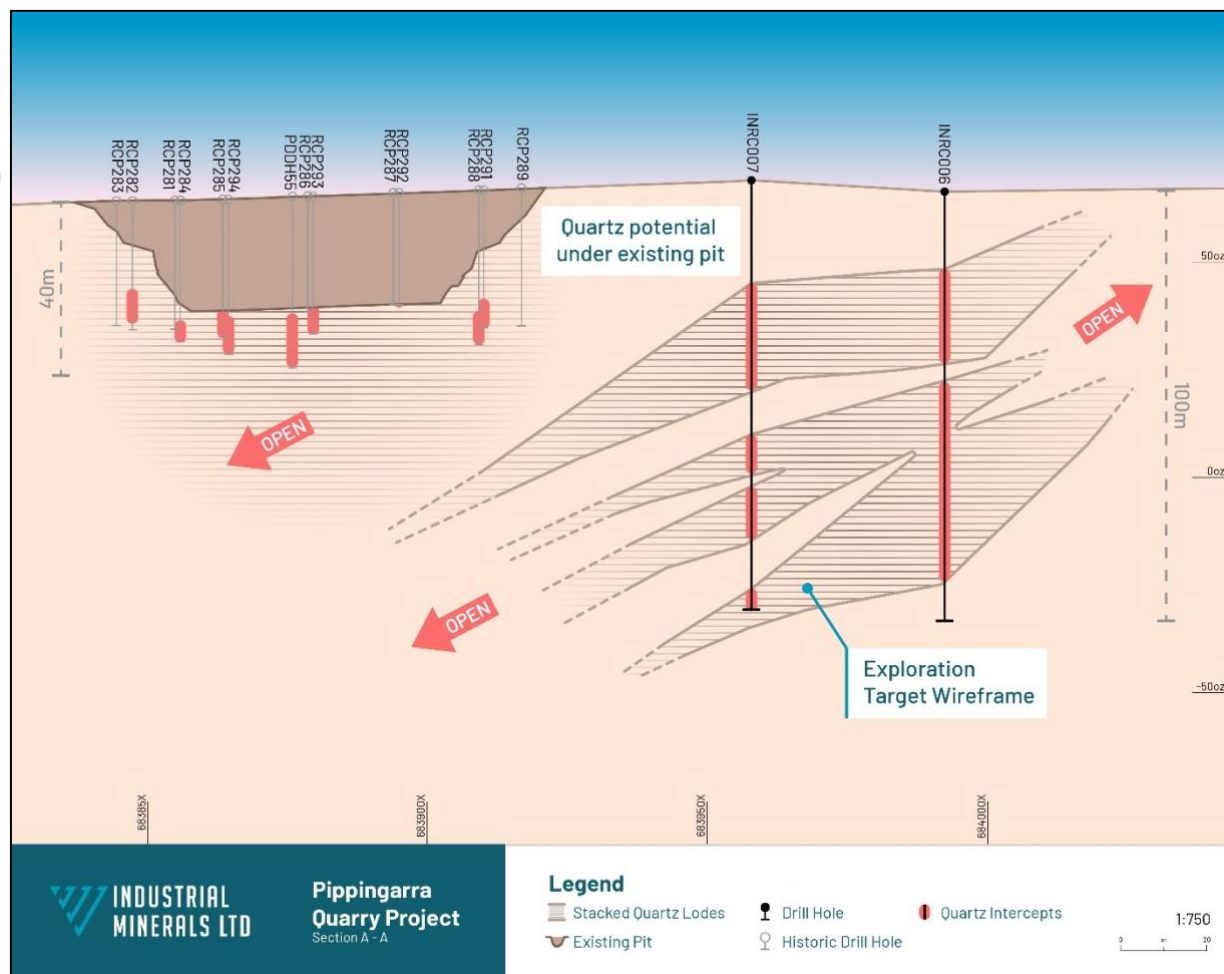
**Table 2:** IND RC Drilling 2023 – Quartz Intersections

Hole ID	GDA94-Z50 E (m)	GDA94-Z50 N (m)	From (m)	To (m)	Quartz Intersection (m)
INRC003	683946	7724249	53	65	12
INRC004	683977	7724220	35	48	13
INRC005	684021	7724196	24	36	12
INRC006	683981	7724147	25	39	14
INRC007	683949	7724176	24	38	14
INRC008	684056	7724219	25	55	20
INRC009	684022	7724249	44	62	18



**Figure 2:** Quartz zone identified in Phase 1 RC and historical diamond drilling results<sup>2</sup>.





**Figure 3:** Quartz zone identified in Phase 1 RC and historical diamond drilling results.

## Phase 2 Drilling Program

IND is planning a Phase 2 RC drilling program to test the continuity of the quartz zones to the east of the Exploration Target area, as well as test a further 19 targets identified from mapped quartz outcrops. The planned drilling will comprise approximately 30 holes for an estimated 2,500m.

There will also be provision for a component of diamond drilling to obtain core for further metallurgical and process flowsheet testing both within Australia and China. Depending on drilling results, continuity of the host lithology, and composition of the quartz zones, the mineral resource could potentially be categorised as inferred or alternatively an indicated resource.



**Figure 4:** Quartz outcrops mapped across Mining Lease highlight potential exploration upside that remains untested.

## HPQ Market

Following his recent visit to the Solar Photovoltaic Industry Quartz Sand Technology and Market Exchange Conference held in Anhui Province China, IND Marketing Manager, Mr Wei Li, was encouraged by the continued strong interest, from buyers and traders, in sourcing High Purity Quartz feedstock. Information from the conference included<sup>3</sup>:

- The price for HPQ ore that meets the middle-layer crucible specification was reported to command ~AU\$1,200 per tonne delivered into China, with the majority of supply coming from India.
- Ore supplied to meet electronic grade quartz powder product is reported to be priced at ~AU\$700 per tonne delivered into China.
- No price data was available for inner-layer quartz ore, due to the tight contractual arrangements with the few suppliers able to supply to meet such a high specification.
- Buyers are willing to engage on consistent quality and long mining life.

<sup>3</sup> Note that this information is indicative only and is based upon feedback given by potential HPQ traders and buyers.

## HPQ Bulk Sample

In early April 2024, a 24 tonne High Purity Quartz (HPQ) ore sample was sent from Pippingarra to a potential offtake partner in China. The sample was crushed, screened, and bagged at the Pippingarra Quarry, prior to being transported to Port Hedland where it was loaded into 20 sea containers. The containers were exported via Berth 2 at the Port of Port Hedland.

The potential offtake partner had previously been sent a smaller quartz sample from Pippingarra, allowing them to conduct an initial assessment of the ore. Their initial testing indicated that the reduction of impurities, along with the low electrical conductivity makes the ore potentially suited to the electronic grade powdered quartz market.

The HPQ bulk sample is currently in transit, and IND looks forward to providing an update on results once they have been received.

## Next Steps – Pippingarra Quarry Project

- Design and execute Phase 2 RC drilling program to further define and test high purity quartz bearing zones that will feature in the planned upcoming Mineral Resource Estimate.
- Progress raw quartz identification, assessment and testwork to determine High Purity Quartz potential based on results received from samples being tested by potential buyers and industry experts in Australia, China and USA.
- Expand marketing of quartz ore and processed High Purity Quartz as product specification sheets are generated from ongoing testwork.

**This announcement has been approved by the Board of Industrial Minerals.**

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## About IND

Industrial Minerals Ltd is a critical minerals explorer and a developer of high purity silica sand (HPSS) and high purity quartz (HPQ) projects across Western Australia. IND's advance HPSS and HPQ projects are positioned to supply the rapidly expanding solar PV, semiconductor, and electronics industries.

IND is continuing to explore for HPQ including in the Pilbara region in Western Australia, where it has recently secured an option to acquire an 80% interest in mineral rights to the operating Pippingarra Quarry (Granted Mining Lease, M45/258).

## Competent Person

The information in this announcement that relates to exploration activities on the Projects is based on information compiled and fairly represented by Mr Bryan Bourke, who is a Member of the Australian Institute of Geoscientists and consultant to Industrial Minerals Ltd. Mr Bourke has sufficient experience relevant to the style of mineralisation and type of deposit under consideration, and to the activity which he has undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Bourke consents to the inclusion in this announcement of the matters based on this information in the form and context in which it appears.

## Forward-looking Statements

Certain statements contained in this document may be 'forward-looking' and may include, amongst other things, statements regarding production targets, economic analysis, resource trends, pricing, recovery costs, and capital expenditure. These 'forward-looking' statements are necessarily based upon a number of estimates and assumptions that, while considered reasonable by IND, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies and involve known and unknown risks and uncertainties that could cause actual events or results to differ materially from estimated or anticipated events or results reflected in such forward-looking statements. Forward-looking statements are often, but not always, identified by the use of words such as 'believe', 'expect', 'anticipate', 'indicate', 'target', 'plan', 'intends', 'budget', 'estimate', 'may', 'will', 'schedule' and others of similar nature. IND does not undertake any obligation to update forward-looking statements even if circumstances or management's estimates or opinions should change. Investors should not place undue reliance on forward-looking statements as they are not a guarantee of future performance.

## Disclaimer

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## Appendix 1 – Pippingarra HPQ Exploration Target

Table 3: Pippingarra HPQ Exploration Target quartz intersections from IND drilling 2023

Hole ID	GDA94-Z50 E (m)	GDA94-Z50 N (m)	From (m)	To (m)	Quartz Intersection (m)
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## Appendix 2 - JORC Code, 2012 Edition

Table 4: JORC Code, 2012 Edition. Section 1.

Criteria	JORC Code explanation	Commentary
<i>Sampling techniques</i>	<p><i>Nature and quality of sampling (e.g. 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.</i></p> <p><i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i></p> <p><i>Aspects of the determination of mineralisation that are Material to the Public Report.</i></p> <p><i>In cases where ‘industry standard’ work has been done this would be relatively simple (e.g. ‘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</i></p>	<p>At the Pippingarra Project the samples from RC drilling were split on a 1.0 metre sample interval at the rig cyclone.</p> <p>All samples were delivered by Industrial Minerals Ltd (IND) to the Port Hedland - Wedgefield depot of Bruce Avery Transport for freighting to North Australian Laboratory located in Pine Creek, NT.</p> <p>All samples from RC drilling are submitted for Four Acid Multi-Element Analysis using ICP-OES and ICP-MS</p>



Criteria	JORC Code explanation	Commentary
	<i>commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.</i>	
<i>Drilling techniques</i>	<i>Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. 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>	Reverse Circulation drilling was carried out by Orlando Drilling using a track-mounted Atlas Copco rig accompanied by an Atlas Copco booster. The drill sample material is recovered as pulverised rock chips. All the drill holes were vertical and drilled to a depth of 100m with one hole being 160m. The deviation of the drill string with holes of a vertical orientation and limited hole depth was considered to be minimal and therefore the holes were not downhole surveyed.
<i>Drill sample recovery</i>	<i>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.</i>	RC samples were logged in detail at the drill site by the supervising geologist and recorded in the company's database. Overall recoveries were excellent and there were no significant sample recovery problems. Sample depths are continually checked against the rod string depth during the drilling process by the senior driller.
<i>Logging</i>	<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. Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. The total length and percentage of the relevant intersections logged.</i>	Detailed geological logging of the entirety of each hole by the IND geologist is carried out on the RC chips and recorded as a qualitative description of colour, lithological type, grain size, structures, minerals, alteration, and various other features. Representative material was sieved and collected as 1m individual samples in number-coded plastic chip trays. Photos of the chip trays was done to provide a reference.
<i>Sub-sampling techniques and sample preparation</i>	<i>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.</i>	Rock chip samples are prepared and analysed by independent certified laboratory, North Australian Laboratory, located in Pine Creek, NT. The samples are dried, crushed and pulverised to 85%

Criteria	JORC Code explanation	Commentary
	<p><i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></p> <p><i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i></p> <p><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></p> <p><i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></p>	<p>passing 75um prior element analysis by ICP – OES and ICP – MS methods</p> <p>The majority of RC samples were dry. Minor water ingress occurred during rod/bit changes however samples were generally dry once active drilling recommenced.</p> <p>Samples were collected at 1m intervals via on-board cone splitter then laid out on the ground. Each 1.0m split sample was collected in a pre-numbered calico bag.</p> <p>Sample quality was ensured by monitoring sample volume and by regularly cleaning the rig cyclone &amp; sample splitters (RC).</p> <p>Sampling sheets were prepared and checked by IND site geologist and field technicians to ensure correct sample representation.</p> <p>In RC drilling QA/QC samples are included at the rates of 1:25 as duplicate samples and one certified reference material (CRM standard) for every 60 samples.</p> <p>The QAQC samples will be analysed, and the results compared with the original sample to provide an assessment of the sampling procedures and laboratory results.</p>
Quality of assay data and laboratory tests	<p><i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></p> <p><i>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.</i></p> <p><i>Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable</i></p>	<p>Certified Reference Materials (CRM or standards) are inserted at the rates 1:60 samples to assess the assaying accuracy of the external laboratories. Duplicate samples were collected at 1:25 samples. Standards, blanks, and duplicates are used by the laboratory for QAQC.</p> <p>No laboratory audits were undertaken.</p>

Criteria	JORC Code explanation	Commentary
	<i>levels of accuracy (ie lack of bias) and precision have been established.</i>	
Verification of sampling and assaying	<p><i>The verification of significant intersections by either independent or alternative company personnel.</i></p> <p><i>The use of twinned holes.</i></p> <p><i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></p> <p><i>Discuss any adjustment to assay data.</i></p>	<p>Primary data (geological) was collected using previously defined standard codes and the information uploaded in Excel files on laptop computers by the supervising geologist.</p> <p>No twin holes were drilled.</p> <p>All data is received and stored securely in digital format in the IND's database.</p> <p>Final data is rigorously interpreted by IND's personnel.</p>
Location of data points	<p><i>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.</i></p> <p><i>Specification of the grid system used.</i></p> <p><i>Quality and adequacy of topographic control.</i></p>	<p>IND's drill hole collars were surveyed using Trimble DGPS by a registered mining engineer with an accuracy of +/- 0.10m.</p> <p>Co-ordinates are provided in MGA94 Zone 50 (GDA94).</p>
Data spacing and distribution	<p><i>Data spacing for reporting of Exploration Results.</i></p> <p><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></p> <p><i>Whether sample compositing has been applied.</i></p>	<p>Minimal sample spacing for assay samples is 1m intervals.</p> <p>The RC drilling at the Pippingarra Project was a nominal 50m hole spacing.</p>
Orientation of data in relation to geological structure	<p><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></p> <p><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></p>	<p>All RC holes are drilled with an azimuth of 0 degrees to provide a true width intersection of the targeted horizon.</p> <p>Holes are designed to intersect the geological contacts/targets as close to perpendicular as possible in order to provide approximate true width intercepts.</p>
Sample security	<i>The measures taken to ensure sample security.</i>	The sample chain of custody is managed by IND.



Criteria	JORC Code explanation	Commentary
		<p>All samples were collected in the field at the project site in number-coded calico bags and then placed in bulka bags by IND's geological and field personnel.</p> <p>All samples were delivered directly to the contracted carrier by IND personnel before being transported to the laboratory in Pine Creek, NT for final analysis.</p>
<i>Audits or reviews</i>	<i>The results of any audits or reviews of sampling techniques and data.</i>	No reviews or audits have been undertaken.

Table 5: JORC Code, 2012 Edition. Section 2.

Criteria	JORC Code explanation	Commentary
<i>Mineral tenement and land tenure status</i>	<p><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></p> <p><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></p>	<p>Industrial Minerals Limited (IND) has an 80% interest in the non-construction mineral rights within M45/258.</p> <p>IND is not aware of any existing impediments nor of any potential impediments which may impact ongoing exploration and development activities at the project site.</p> <p>Tenements are located on the Wallareenya pastoral lease.</p>
<i>Exploration done by other parties</i>	<i>Acknowledgment and appraisal of exploration by other parties.</i>	<p>Exploration within and around the Pippingarra M45/258 has been carried out since the 1950's - initially for tantalum and beryl, then muscovite and in the 1980's for microcline feldspar. The mining operations for feldspar ended in the late 1990's and from this time onwards activities within M45/258 have primarily been quarrying. The quarrying operations are presently carried out by North West Quarries who supply a wide range of civil and construction materials. All prior exploration studies including drilling were focused on the exploration for and development of the microcline feldspar resources.</p>

Criteria	JORC Code explanation	Commentary
Geology	<i>Deposit type, geological setting and style of mineralisation.</i>	The Pippingarra Project area is located about 30km south east of the Port Hedland town site in the Pilbara Region of WA. The Pippingarra pegmatite was an area of mining activity in the 1950's where beryl and columbite concentrates were mined from alluvial material shed from the pegmatites in the immediate area of M45/258. The Pippingarra pegmatite is wholly within the Archaean porphyritic adamellite that is part of the Carlindi Batholith. It has been variously described as being a flat lying pegmatite with a stike of about 2000m, a width of 200m and up to 30m thick.
Drill hole Information	<p><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></p> <p><i>easting and northing of the drill hole collar</i></p> <p><i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></p> <p><i>dip and azimuth of the hole</i></p> <p><i>down hole length and interception depth</i></p> <p><i>hole length.</i></p> <p><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></p>	<p>Drill hole data is reported on in the body of the announcement.</p> <p>RL elevation data has been provided with the collar data.</p>
Data aggregation methods	<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>	No data aggregation methods have been used.

Criteria	JORC Code explanation	Commentary
	<p>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.</p> <p>The assumptions used for any reporting of metal equivalent values should be clearly stated.</p>	
Relationship between mineralisation widths and intercept lengths	<p>These relationships are particularly important in the reporting of Exploration Results.</p> <p>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</p> <p>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').</p>	Geological intercepts are provided as downhole lengths; holes were oriented vertically to be perpendicular to pegmatite.
Diagrams	<p>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.</p>	Maps and plans are included in the body of the announcement.
Balanced reporting	<p>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.</p>	Results are commented upon in the text of this report.
Other substantive exploration data	<p>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,</p>	All relevant data are reported in this release.



Criteria	JORC Code explanation	Commentary
	<i>groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</i>	
<i>Further work</i>	<i>The nature and scale of planned further work (e.g. 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.</i>	Field work, including mapping and sampling, to better evaluate pegmatite and high purity quartz areas is being assessed.  Infill and extensional drilling is currently being designed.