ASX RELEASE

25th August 2022
ASX:PEC

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We wish to acknowledge the Traditional Custodians of the land (Yamatji Southern Regional) on which we are developing the Beharra Project, and pay our respects to their Elders past, present and emerging.

Petrological Examination Supports Beharra Low Impurity Profile

HIGHLIGHTS:

- Petrographic and photomicrograph analysis completed on Beharra silica sand, showing extremely high-quality sand deposit and processed end product.
- Observations confirm low impurities as well as providing significant insights into the mineralogical residences and form of impurities.
- Minor trace impurities have been identified and their occurrence and location within the silica grains is now well understood.
- Outcomes provide further confirmation and understating of remaining impurities which will aid in offtake discussions.

Perpetual Resources Limited (**ASX: PEC,** "PEC", "Perpetual" or "the Company") is pleased to provide details of petrographic and photomicrograph analysis undertaken on silica sand at the Company's flagship Beharra project.

The results of this analysis have added additional understanding of the occurrence, form, and mineralogical residences of impurities at Beharra, which will aid in advancing our understanding of the ability to achieve further impurity removal, when compared to prior metallurgical test work announcements.

Figure 1 – Photomicrograph images of the Upper White sub domain, Left, image is -0.60mm to +0.15mm, right image is -1.0mm to +0.60mm (Bar line in the upper right is 1mm)

As well as proving a much greater understanding of the low impurity profile of Beharra silica sand, this additional information will further aid ongoing discussions with potential offtake partners, some of whom are conducting additional testing to ascertain whether further processing of Beharra silica sand is viable in their own countries.

This additional analysis also helps to clarify what spectrum of potential end products can be produced from Beharra, with a more complete understanding of the impurity profile of end product streams. This will inform what end users can expect in terms of performance of Beharra silica sand when used in various potential end product applications.

Photomicrograph Analysis

Photomicrographs were undertaken on size fractions of field samples that were compiled from phase 3, July 2021 drill samples and representative of the all the various subdomain sand sequence at Beharra. The size fractions were generated as part of the particle size distribution (PSD) test work required for the pending Mineral Resource and Ore Reserve upgrades which are still being generated. The photomicrographs are also of great assistance to obtain a visual appreciation of the sand fractions, remembering that these samples have had no processing other than application of water for the purpose of a sieving process.

The field samples for PSD test work were wet screened over a set of 12 laboratory sieves with the largest aperture being 1.18mm and the smallest aperture being 0.038mm. Photomicrographs were taken of recomposited sieve samples that includes a course -1.0mm to +0.60mm fractions, and a fine -0.60mm to +0.15mm fractions. The finer fractions cover the grainsizes used for manufacture of clear glass. A total of 41 photomicrographs were taken with 11 each from the upper and lower white domains, 9 from the grey above water table domain, 4 from grey below water domain and 4 from the yellow domain. The photomicrographs demonstrate how clean the sand is (before processing) and relatively and low in impurities, consisting of white to cream colored sand grains that are considered ideal for use in clear glass applications.

See Figures 1, 2 and 3 that demonstrate the high quality of limited processed (washed only) fractions from the upper horizons above the water table of the Beharra orebody.

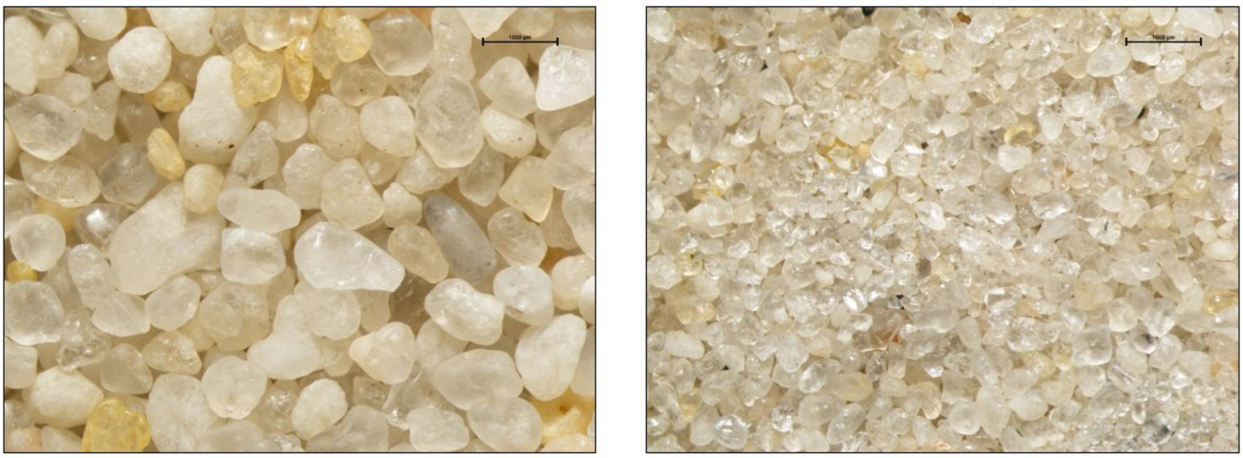


Figure 2 – Photomicrograph images of the Lower White sub domain. Right, image is -0.60mm to +0.15mm, left image is -1.0mm to +0.60mm. (Bar line in the upper right is 1mm)

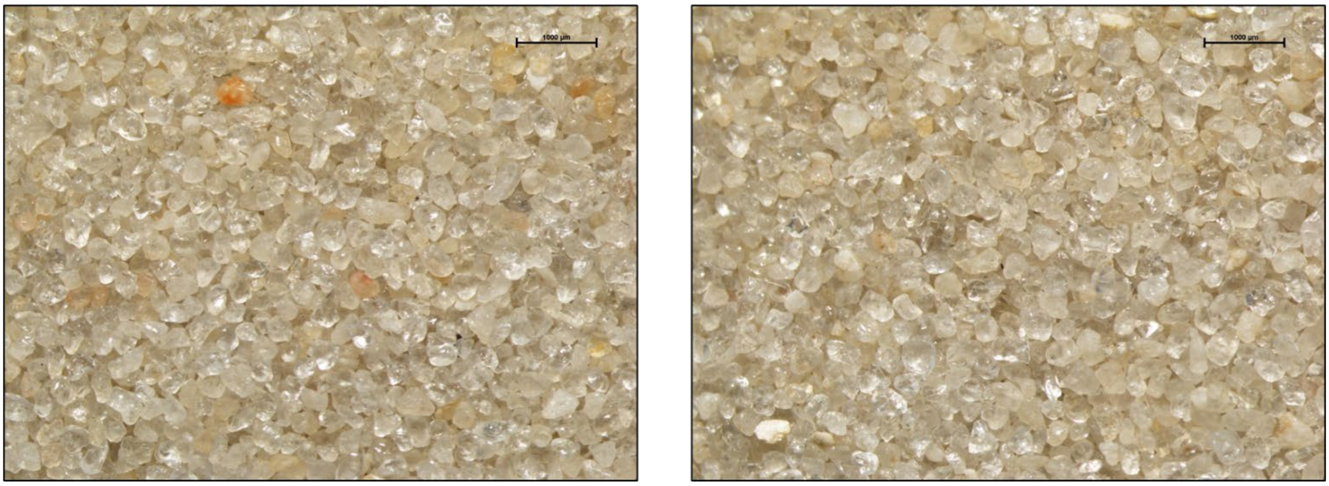


Figure 3 – Photomicrograph images of the Grey Above Water Table sub domain. Both images are -0.60mm to +0.15mm, (Bar line in the upper right is 1mm)

Petrological Analysis

Two high purity processed silica sand samples from the Beharra silica sand project were submitted to Paul Ashley (MAusIMM, FSEG) at Paul Ashley Petrographic and Geological Services, in Armidale NSW, for detailed mineralogical examination. The samples represented end products from laboratory processing of upper white and lower white bulk samples undertaken by IHC Robbins in Brisbane. Both samples as received for petrological examination were of dry, flowing, pale creamy to white, medium grained quartz-rich sand.

The samples were of screen feed sand and labelled 2190LW and 2190UW. Both had similar particle size distribution and provided data showing that 100% of 2190LW was in the range 125-1000 µm and that 99.9% of 2190UW was in the range 90-1000 µm. Analyses by ICP were provided, indicating that although both samples had high SiO_2 values (99.6% and 99.7% respectively), they also contained values of Al_2O_3 (2278 and 1234 ppm respectively), Fe_2O_3 (177 and 189 ppm respectively), TiO_2 (306 and 369 ppm respectively) and K_2O (621 and 75 ppm respectively). The purpose of the mineralogical investigation was to ascertain the mineralogical residences and form of these impurities.

Method of Analysis

1. Initial microscopic examination. This was performed by placing small volumes of sand from each sample (several hundred grains of each) in immersion oil (refractive index of ~1.515) and microscopically examining the sand in transmitted and oblique reflected light. Photomicrographs were taken of characteristic mineralogical features.

2. Petrographic examination of polished thin sections and polished grain mounts (sand mounted in resin blocks) of each sample that were prepared by Geochempet Services in Brisbane. This was done in transmitted and reflected light. Again, photomicrographs were taken of characteristic mineralogical features.

Results (excerpts from P Ashley's petrology report)

Microscopic examination of sand samples in immersion oil

Sample 2190LW (see Figs 1-3 over page)

Particle size was assessed as in the range 0.2-1 mm, with grains being subangular to rounded. Almost all grains were identified as quartz, with the possibility of a single grains of tourmaline and one of leucoxene occurring. Quartz grains are clear to turbid (whitish in reflected light) with the turbidity largely due to the occurrence of tiny fluid inclusions and microfractures. A few quartz grains contain tiny rutile needles. Approximately 4 grains (<1% of the total examined) had thin, discontinuous coatings or fracture fillings of orange-brown goethite or reddish hematite. One or two grains had possible thin pale colored partial coatings of a clay phase. A couple of quartz grains had tiny dark (opaque) inclusions of an unidentified mineral.

The presence of traces of rutile and leucoxene in the sample can explain the TiO_2 content. Similarly, the tiny amounts of Fe oxide minerals observed accords with the Fe_2O_3 content. The origins of the Al_2O_3 and K_2O contents of the sample remains somewhat uncertain, but likely to be accommodated in a clay phase (e.g., illite).

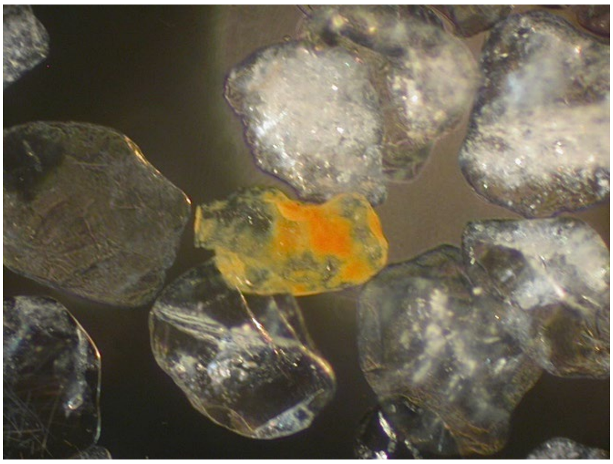


Figure 4 - Orange goethite coating on quartz grain. Other quartz grains range from clear to turbid (fluid inclusions and microfractures). Field of view 2 mm across.

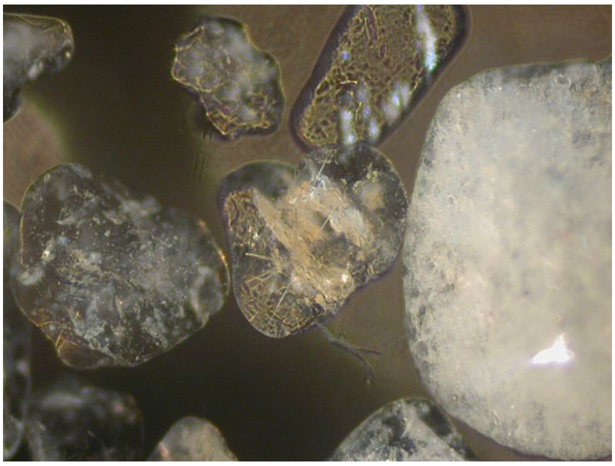


Figure 5 - Central quartz grain has tiny acicular rutile inclusions. Other quartz grains range from clear to turbid (white). Field of view 1.5 mm across.

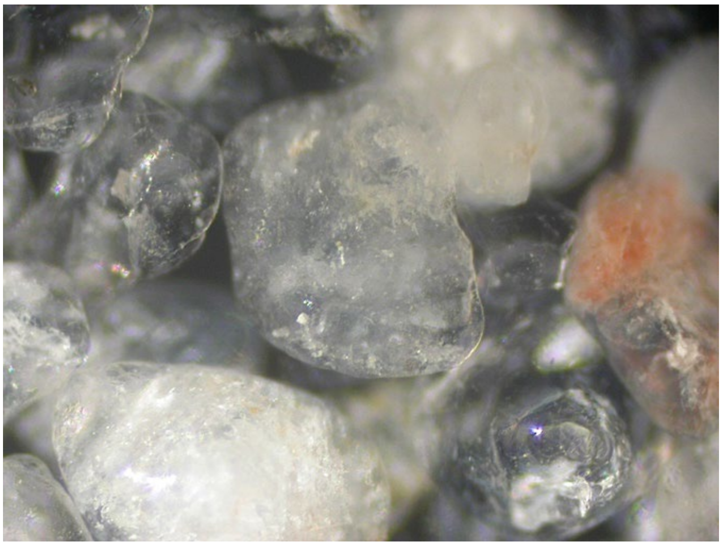


Figure 6 - Range of quartz grain morphologies, with one at right having a little red-brown hematite coating. Field of view 2 mm across.

Sample 2190UW (see Figs 4-6)

This sample is similar in most respects to 2190LW. Particle size was assessed as in the range 0.2-1 mm, with grains being subangular to rounded. All grains were identified as quartz, with these being clear to turbid (whitish in reflected light) with the turbidity largely due to the occurrence of tiny fluid inclusions and microfractures. A few quartz grains contain tiny rutile needles. Approximately 4 grains (<1% of the total examined) had thin, discontinuous coatings or fracture fillings of reddish hematite and faintly developed orange-brown goethite. One or two grains had possible thin pale-colored partial coatings of a clay phase.

The presence of traces of rutile as inclusions in quartz can be explained in the same way as those that relate to 2190LW.

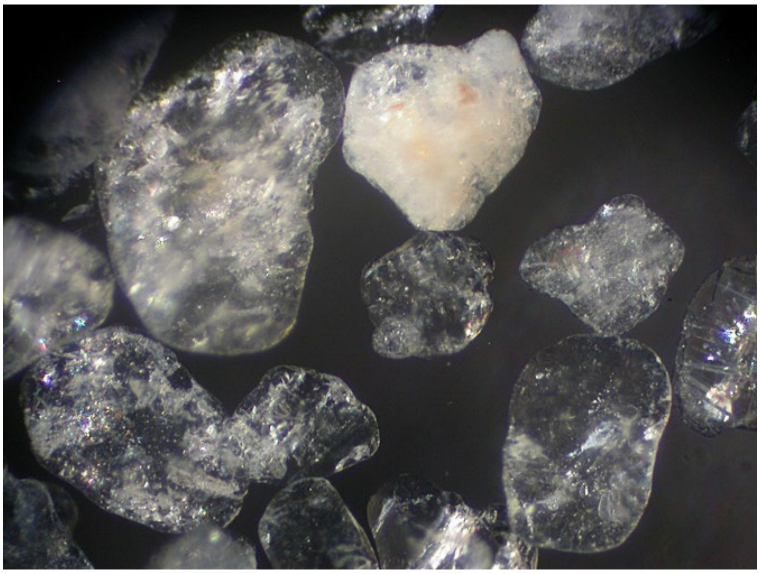


Figure 7 - Range of quartz grain morphologies, with the white grain having a possible clay (slight coating) and faint development of an Fe oxide phase (orange). Field of view 2 mm

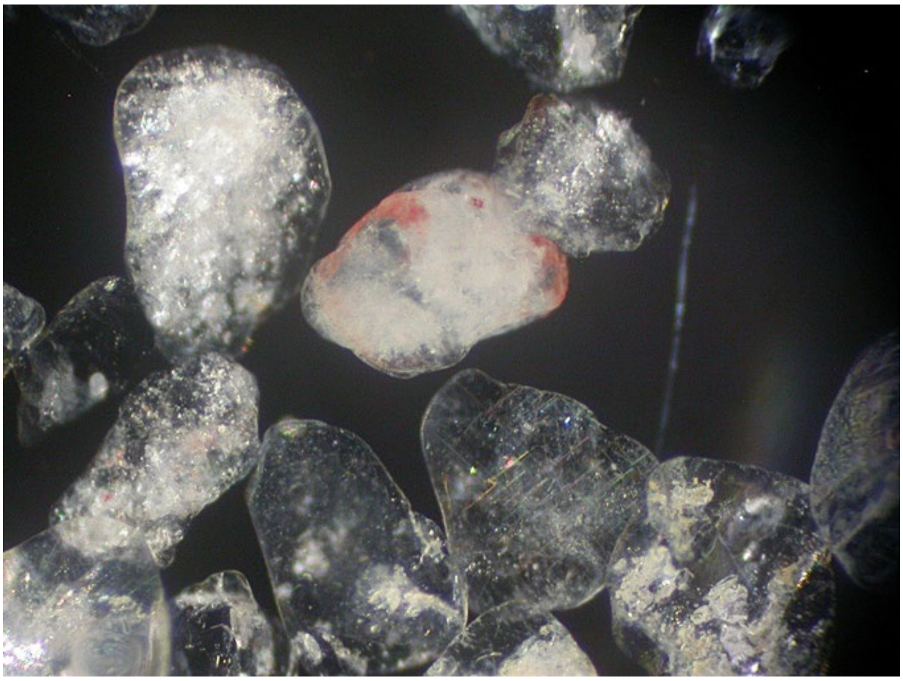


Figure 8 - Range of quartz grain morphologies, with one at centre having a minor red-brown hematite coating, and trace clay could be present in whitish grains. Field of view 2 mm

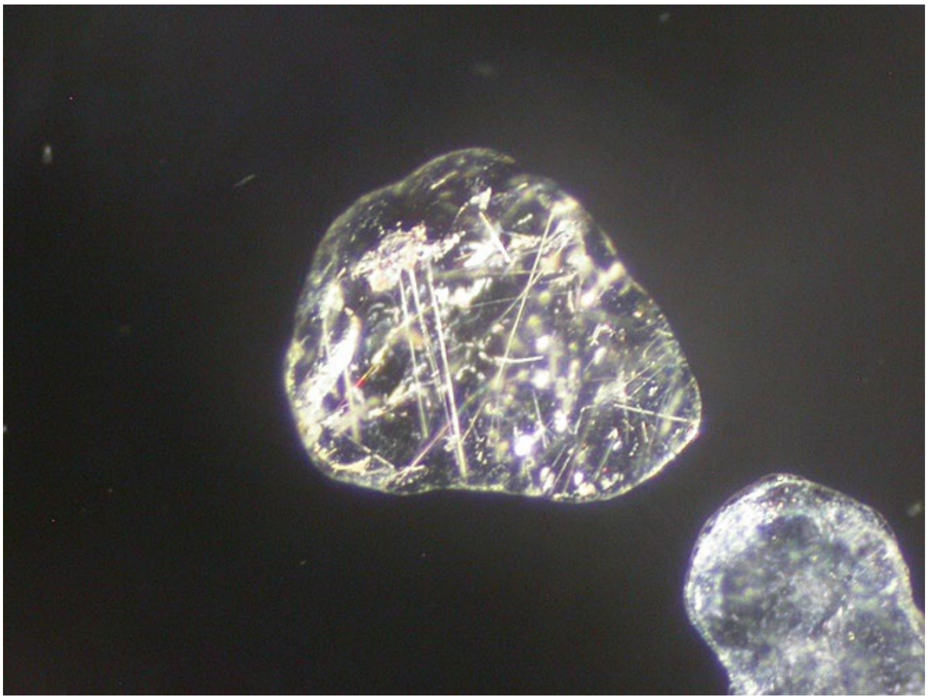


Figure 9 - Quartz grain with tiny acicular rutile inclusions. Field of view 1 mm across.

Petrographic examination of sand samples in prepared sections

Sample 2190LW

Several hundred sand grains occurred in each of the polished thin section and polished block mounts. Almost all grains were of quartz, which is estimated to have had a particle size ranging between ~0.1 mm to 1.2 mm, and with grains being angular to sub-rounded (see Figure 7 below). It was observed that three quartz grains had included grains of muscovite up to 40 µm across, one grain had an inclusion of rutile ~50 µm across and another had an inclusion of garnet ~0.1 mm across. The sample also had a single grain of K-feldspar ~0.3 mm across and another of a lithic grain ~0.4 mm across, with the latter being composed of altered fine grained basalt, composed of albite and chlorite, with trace hematite and rutile (see Figure 8 over page).

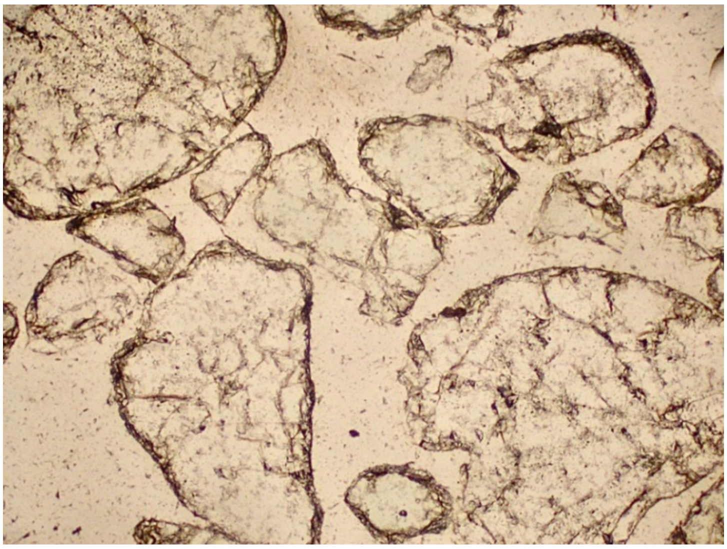


Figure 10 - Typical morphology of angular to sub-rounded quartz grains. Plane polarised transmitted light, field of view 2 mm across.

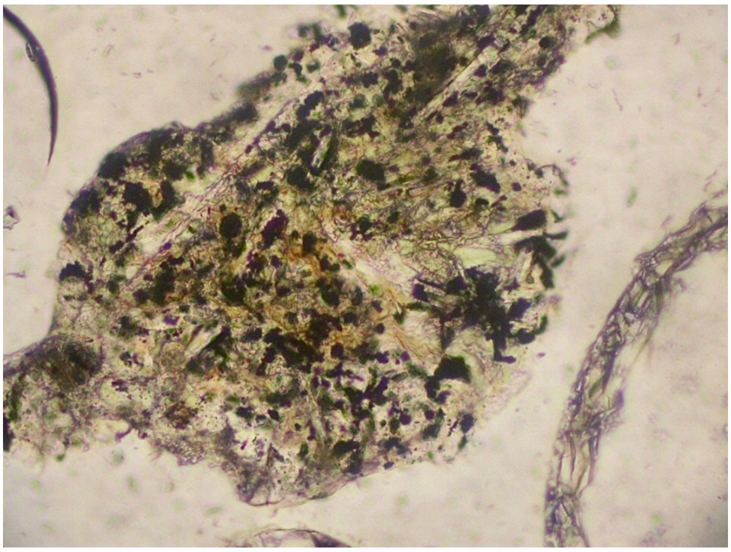


Figure 11 - Lithic grain of altered basalt composed of albite and chlorite, with tiny black grains being hematite and rutile. Quartz grains are present at left and right. Plane polarised transmitted light, field of view 0.5 mm across.

Sample 2190LW

Several hundred sand grains occurred in each of the polished thin section and polished block mounts. Almost all grains were of quartz, which is estimated to have had a particle size ranging between ~0.1 mm to 1.1 mm, and with grains being angular to sub-rounded (see Figure 9 below). Two possible grains of somewhat turbid K-feldspar were observed (larger one ~0.5 mm across) (see Figure 10 over page) and there was a single discrete (liberated) grain of leucoxene ~0.3 mm across (see Figure 11 over page). Rare tiny rutile grains were observed as inclusions in quartz, and one quartz grain had a small (~0.1 mm) inclusion of biotite (see Figure 9 below). Other quartz grains have rare tiny amounts of superficial goethite staining. The occurrence of rutile inclusions in quartz and goethite staining corroborates with the observations made of the sand samples in immersion oil (e.g., in Figures 1-3 & 6).

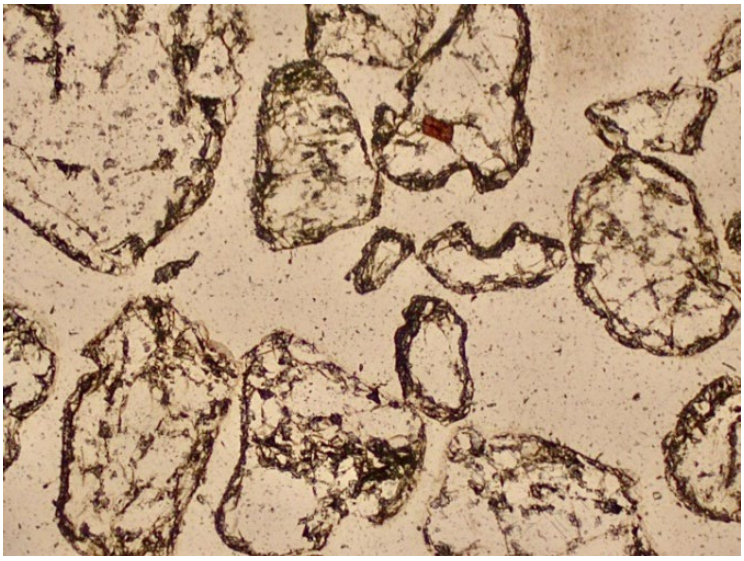


Figure 12 - Typical morphology of angular to sub-rounded quartz grains. The grain at upper centre has a small brown inclusion of biotite. Plane polarised transmitted light, field of view 2 mm across.

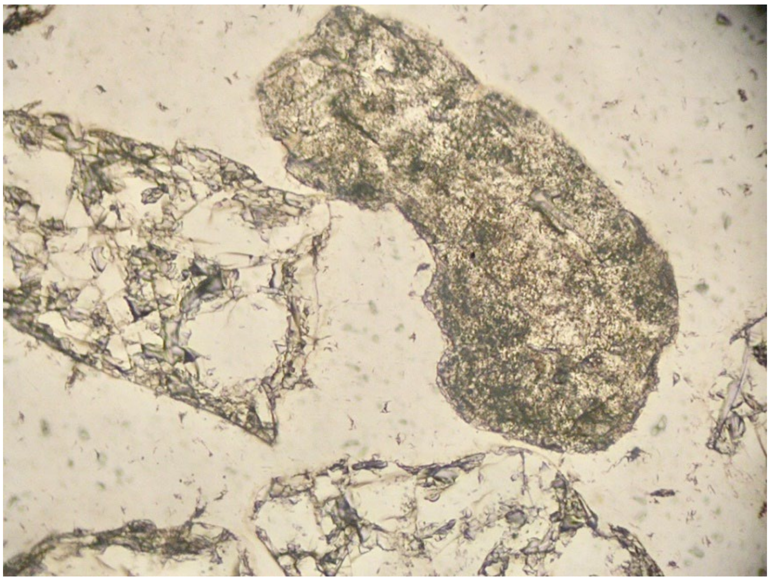


Figure 13 - Slightly turbid (likely slightly clay altered) grain of K-feldspar (grey), with adjacent quartz grains. Plane polarised transmitted light, field of view 1 mm across.

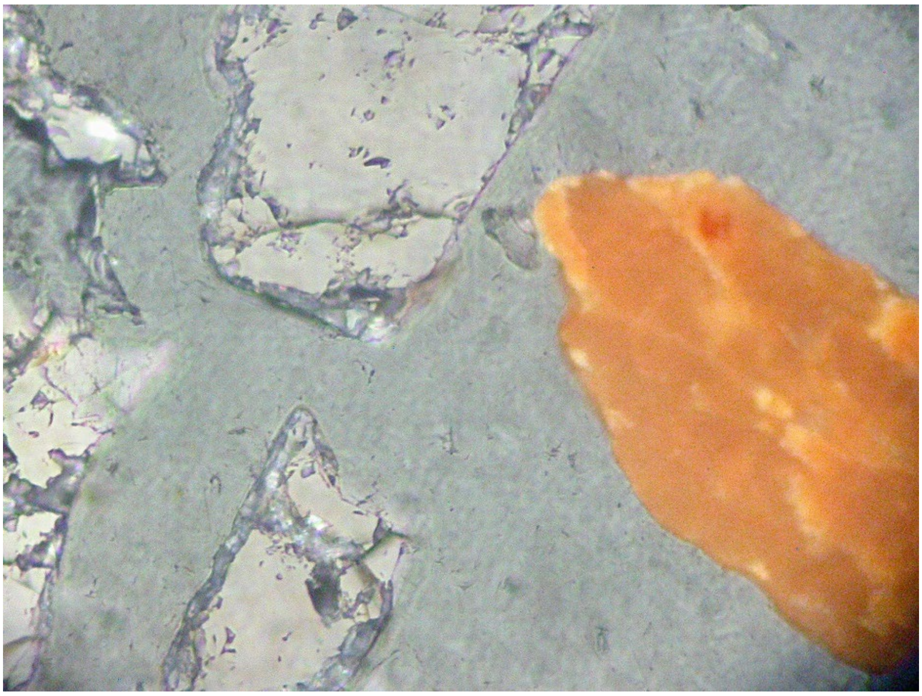


Figure 14 - Grain of leucoxene (orange) with adjacent quartz grains. Plane polarised reflected light, field of view 0.5 mm across

Comments and interpretation of geochemical data (P Ashley)

Microscopic observation of the two silica sand samples (2190LW and 2190UW) using a combination of examination under immersion oil and the standard petrographic technique of polished thin sections and polished blocks has shown the following:

- Uncommon (e.g., <<1%) of quartz sand grains appear to have slight surficial coatings and local fracture fillings of ultrafine grained supergene Fe oxide minerals, e.g., mostly goethite and a tiny trace of hematite. Such occurrences are likely to be extremely thin, maybe on a scale of microns.
- Similarly, it is possible that slight coatings of an ultrafine clay mineral (e.g., illite, kaolinite) could occur on some quartz grains.
- Tiny mineral inclusions occur in some quartz grains. The majority are tiny acicular grains of rutile (width of needles at most a few microns), but rare grains of muscovite are observed, along with single grains of biotite and garnet (up to 0.1 mm across).
- Rare discrete (i.e., liberated and not attached to quartz) grains of K-feldspar (perhaps slightly clay-altered), leucoxene and tourmaline have been observed. A single lithic grain was also present, with this being interpreted as being composed of altered fine grained basalt, replaced by albite, chlorite and trace hematite and rutile.
- The total amount of mineral inclusions in quartz and liberated individual mineral and lithic grains is extremely low.

The observed minerals, apart from quartz, in the silica sand samples, are an explanation for the minor to trace components apparent in the geochemical assay data. Al_2O_3 is likely to be accommodated in feldspar grains (K-feldspar and albite in the lithic grain), clay (e.g., illite, kaolinite), micas (muscovite, biotite), tourmaline and garnet. Fe_2O_3 would be mostly held in the supergene Fe oxide (goethite, hematite) grain coatings and fracture fillings, and TiO_2 would be largely present in rutile and leucoxene (an amorphous form of TiO_2). The small amount of K_2O present would be held in K-feldspar and micas, and possibly, clay. Similarly, the LOI value (loss-on-ignition, largely being H_2O) would be held in goethite, clays, and micas. Although there is a little ZrO_2 in the analyses, no discrete zircon was observed, but it is likely to be present as a tiny trace constituent.

(Note, zirconium trace could be as a result of a zirconium bowl used to pulverize the samples for assay)

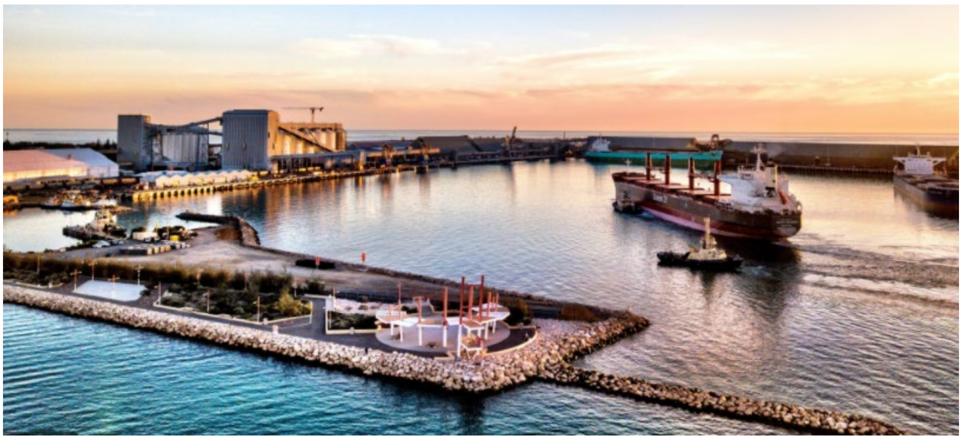
About Perpetual Resources Limited

Perpetual Resources Limited (**Perpetual**) is a focused explorer of silica sands, aiming to produce high purity silica for export to the high growth Asian markets.

Perpetual's flagship asset, the Beharra Project (**Beharra**) is located 300km north of Perth and is 96km south of the port town of Geraldton in Western Australia. Access to the Project from Geraldton (to the north) and Perth (to the South) is via the sealed Brand Highway, thence approximately 8.5km east on the Mt Adams unsealed road providing access to the center of the tenure.

Mt Adams Road which Intersects the Beharra Tenement (left) and Brand Highway Intersection with Mt Adams Rd (right)

The port of Geraldton is an established bulk material handling facility and is currently utilised for the export of bulk materials, minerals, grain and concentrates. Commodities currently exported via Geraldton Port include grains, copper concentrates, zinc concentrates, nickel concentrates, mineral sands, talc, and iron ore.



Geraldton Port – Operated by Mid-West Port Authority

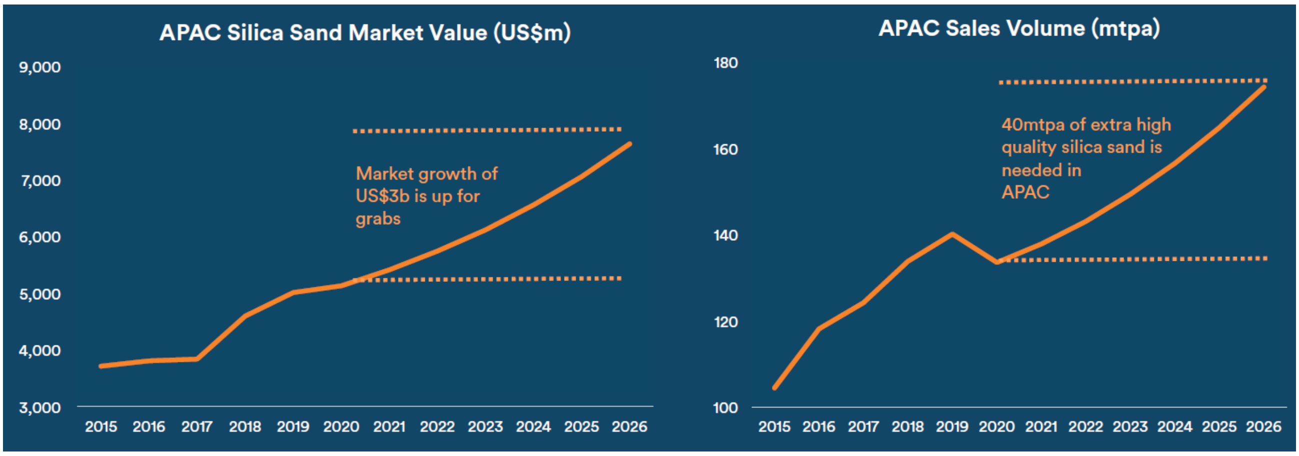
The Beharra Project comprises of a single exploration license, E70/5221, initially covering an effective land area of 56.8km^2. In June 2021 Mining Lease M70/1406 was awarded covering an effective land area of 10.34km^2 for a period of 21 years. M70/1406 covers the southern end of EL70/5221 which has resulted in a reduction of this exploration tenement to 48.55km^2.

E70/5951 Beharra West consists of a north south strip of freehold land with an effective area of 44.8km2 and lies directly west of E70/5221 on the western side of the Yardanogo Nature Reserve. Beharra West and Beharra make up the Beharra Silica Sand Project.

Auger and air core drilling has confirmed the presence of extensive, high purity silica sands, with a maiden Mineral Resource Estimate completed in July 2020. A detailed Pre-Feasibility Study and Maiden Ore Reserve for Beharra was released to the ASX on March 17th, 2021. Subsequent rounds of bulk metallurgical testing have further improved the potential final product specifications at Beharra.

Silica Sands Market

Silica sands have an extensive range of uses, with lower purity (<99.5% SiO_2) and lower priced applications including construction sand, proppant sand used in well fracturing, and foundry sand. With increasing purity (>99.5% SiO_2) and price, uses include glass making including ultra-clear glass, with a main determinant of the sand's suitability for specific applications and pricing being the level of the key impurity iron oxide (Fe_2O_3). Significant expansion of solar PV cell manufacturing capacity globally is driving demand for silica sand with Fe_2O_3 content of <200ppm and lower, which is a key focus market for Beharra.



Source: IMARC Group, Report Title: "Asia Pacific Silica Sand Market: Industry Trends, Share, Size, Growth, Opportunity and Forecast 2021-2026", Report Date: February 2021

Perpetual is targeting the high growth Asia Pacific silica sand markets, where independent market assessments have calculated a 40mtpa incremental market growth opportunity through to 2026.

This announcement has been approved for release by the Board of Perpetual.

For enquiries regarding this release please contact:

Mr. Nicholas Katris - C*ompany* Secretary - +61 433 180 967

COMPETENT PERSONS STATEMENTS

The information in this report that relates to exploration activities for the Beharra Project is based on information compiled and fairly represented by Mr Colin Ross Hastings, who is a Member of the Australasian Institute of Mining and Metallurgy and consultant to Perpetual Resources Limited. Mr Hastings is also a shareholder of Perpetual Resources Limited. Mr Hastings 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 Hastings 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 Perpetual, 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. Perpetual 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.

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JORC Table 1, Sections 1 and 2

JORC Table 1 – Section 1: Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*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 downhole gamma sondes, or handheld XRF instruments, etc). 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.* *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 commodities or mineralisation types (e.g., submarine nodules) may warrant disclosure of detailed information.*	Auger drilling and sampling recently completed (July 2022) at the northern end of the Beharra Tenement (E70/5221). Previous drill programs within this tenement includes Phase 3 air core drill program (June 2021) and two separate earlier air core drill programs, Phase 1 March 2020, and Phase 2 September 2020 as described in this table. July 2022. Auger samples were collected directly from the ager flights by scoping a sample from the cuttings. The sample mass taken was approximately 1 kg and placed in a labelled calico bag. The remainder of the sample was place near the drill hole to be used to back fill the drill cavity once the hole depth was completed. As described below the sampling interval adopted for all previous drill programs was maintained. Chip trays reference samples and drill logs records were as described below under the June 2021 Phase 3 program. June 2021: Aircore samples were collected for each meter drilled via a cyclone fitted with a rotary splitter. The splitter rotation speed was set to deflect approximately 25% to 30% of the sample drilled. This resulted in an average subsample weight of 2.7kg/m. The subsample was collected in a calico bag. The remainder of the sample was collected in a 450mm x 900mm green plastic enviro bag. The average weight for splitter reject was about 5.6kg/m. Samples were weighted using a spring balance. The first 0.5m from surface was not sampled in line with assumption that if mining commenced the top 0.5m would be stripped and stockpiled to be used for rehabilitation after mining. Samples were collected from 0.5 to 1.0m, then 1.0 to 2.0m etc to the end of the hole finishing on a full meter. Representative sample of each interval sampled were placed in chip trays and photographed for reference. Drill logs were maintained and included recording main and secondary lithology as well as colour, grainsize sample interval and number, and moisture condition and groundwater intersections. March 2020: Aircore samples were collected via a cyclone, the entire sample for each 1 m drill interval was collected and placed in a calico sample bag. No splitting on the rig was undertaken. The sample was labelled with the drillhole number and sample interval, and a waterproof tag nominating a sample number was placed in the bag and then sealed with a tie.

Criteria	JORC Code explanation	Commentary
		September 2020: Aircore samples were collected via a cyclone, the entire sample for each 1 m drill interval was collected and placed in a calico sample bag, labelled with the drillhole number and sample interval, and weighed by a spring balance. A 1 kg split was taken by spear and placed in a smaller calico bag, labelled with a sample number. Aircore samples were collected from each metre drilled or part metre if the hole was not ended on a full metre. For the September program, separate samples were taken for 0–0.5 m and for 0.5–1 m. Only the latter had a 1 kg split taken from it. Representative samples of each interval drilled were placed in a chip tray for reference. Earlier ((2019) drilling and sampling reported previously were obtained from hand auguring to a maximum depth of 2 m. Three auger samples were collected from each hole being surface to 0.5 m, 0.5–1.0 m, and 1.0–2.0 m. The top metre of the hole was split into two samples to allow a separate sample of the top 0.5 m that contains organic matter associated with native ground cover. If sand mining operations were to be carried out, this top 0.5 m would be stockpiled for future rehabilitation, so at this time treating it separately is appropriate. The shallow auger program was carried out to obtain representative sand samples to a maximum depth of 2 m for the reasons as described in the Company release of 12 February 2019.
Drilling techniques	*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).*	July 2022: A total of 25 auger drill holes were completed for a total depth of 117.2m with an average hole depth of 4.7m. The drilling was carried out by APS Pty Ltd using a APSA 20 drill driving 3” flight augers fitted with a tungsten carbide bit. All holes were drilled vertically. June 2021: A total of 86 aircore drillholes were completed to an average depth of 12.3m, with hole depths ranging from 11m to 17m. The total length drilled was 1,153m and the total length sampled was 1,110m (top 0.5m not collected) The drilling was carried out by Bunbury WA based drill contractors, Hornet Drilling provided a Mantis 75 air core drill rig mounted on a 6x6 Toyota Landcruiser. The rig is fitted with a 160cfm/125psi compressor and supported by Isuzu 300 service truck. The drill string consisted of 75mm diameter twin tube rods fitted with an 81mm diameter air core bit. Sample collection was via a cyclone fitted with a rotary splitter. All holes were drilled vertically. September 2020: A total of 32 aircore drillholes were completed to an average depth of 12.3 m, with the deepest hole ending at 17 m.

Criteria	JORC Code explanation	Commentary
		September 2020 aircore drilling was undertaken using a track mounted KL170 hydraulic top drive rig coupled to a 250 psi compressor. An 84 mm vacuum bit was fitted to a 76 mm outside diameter twin tube rod string. The internal diameter was 51 mm. All holes were drilled vertically. March 2020: A total of 40 aircore drillholes were completed for an average depth of 12.7 m, with the deepest hole ending at 20 m. Aircore drilling was undertaken using a track mounted Hitachi hydraulic top drive rig coupled to a 130 cfm/100 psi compressor. A 76 mm aircore bit was fitted to 70 mm twin tube rod string. All holes were drilled vertically. Auger drilling Pre 2020 consisted of a manually hand operated 75 mm diameter sand auger (Dormer Sand Auger) with PVC casing utilised to reduce contamination potential as the auger is withdrawn from the hole. The auger was driven about 300 mm then retracted and the sample was placed in a UV resistant plastic bag, and this continued until the sample interval was completed. The sample was labelled with the drillhole number and sample interval, then placed in a second plastic bag and sealed and removed from site for logging and sample preparation.
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.*	July 2022: Auger cuttings were collected on a shovel and then speared using a 100mm wide aluminium scope to collect approximately 1 kg of sample. The remainder of the sample was placed near the hole and all cuttings were scraped away from the hole to receive cutting from the next sample interval. June 2021: Aircore sub-samples (cyclone splits) and cyclone rejects were individually weighed which resulted in a average sub-sample weight of approximately 2.7kg and a reject weight of approximately 5.6kg, resulting in an average weight of about 8.4kg. Recovery was therefore approximately 100% over the entire sample length with a theoretical weight kg/m based on the drill hole diameter of 8.4kg/m. March 2020: Aircore – each sample bag was weighed to determine the actual sample recovery, which resulted in an average sample weight of approximately 7.5 kg/m of sample. September 2020: Aircore – each sample bag was weighed to determine the actual sample recovery, which resulted in an average sample weight of approximately 4 kg/m of sample. June 2021: Aircore sampling was typically terminated 2 m below the water table which resulted in an estimated water table of 10-12m below surface level. Hole depths ranged from 11 m to 18m.

Criteria	JORC Code explanation	Commentary
		The cyclone was cleaned regularly and at the end of each hole to ensure maximum and representative recovery. March 2020: Aircore sampling was typically terminated on reaching the water table, which occurred around 10–12 m below surface level. September 2020: Aircore sampling was typically terminated 2 m below the water table. Hole depths ranged from 9 m to 17 m. The cyclones were cleaned regularly to ensure maximum and representative recovery. For auger sampling, each sample bag was weighed to determine the actual sample recovery, which resulted in an average sample weight of 7.5 kg/m of sample. The type of sand auger used provided a clean sample with less possibility of contamination compared to a flight auger.
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.*	The samples have been sufficiently logged including but not limited to, estimates of grain size, sorting and texture, and colour. Particular attention has been taken to ensure a more scientific and less subjective approach to colour has been adopted because colour (white to grey shades, and pale yellow and grey shades) is one of the targeting features. Chip tray samples for each hole were photographed.
Subsampling 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 subsampling 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.*	July 2022: Sub-samples were taken by driving a scope through the entire recovered auger sample for each sample length. Sampling method and mass taken is considered appropriate and representative. June 2021: Sub-samples were collected via the drill rig rotary splitter. Average weight of sub-samples was 2.7kg. These samples were road transported to Intertek's laboratory located at Maddington, Perth. Intertek carried out a reconciliation of samples received against the sample submission form. A total of 1,233 samples were received. Five samples were missing but located in the company's storage facility at Dongara. These will be submitted to Intertek. The samples were dried and then re-split to collect a sub sample for assaying. The remainder of the sub-sample was re-bagged to be shipped to IHC Robbins in Brisbane for commencement of further metallurgical testing. Duplicate samples were inserted into the sample batch at the rate of approximately 1:21 and similarly standards at the rate of about 1:41. The sample size is appropriate to the grain size of the material being sampled. March 2020: Aircore samples were transported to Welshpool in Perth and locked in a secure storage shed.

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		Further check logging was undertaken, and representative subsamples were taken for duplicate analysis. Subsampling was carried out by spearing the samples selected and collecting approximately 400 g of sample. The duplicates have been utilised at the rate of 1:20. September 2020: Duplicate 1 kg subsamples were taken in a ratio of 1:18 at site. Blanks were generated from a publicly available washed sand product and taken by spearing a 20-bulk sample: March 2020 approx.400 g samples; September 2020 approx. 1 kg samples. The blanks have been utilised at the rate of 1:20 in March and 1:18 in September. March 2020: The prepared subsamples (duplicates and blanks) plus all the bulk drill samples were submitted to Nagrom Metallurgical Analytical Laboratories located in Kelmscott in Western Perth for drying, further splitting, and pulverisation in a zircon bowl. A subsample of 100 g with a P90 -75 µm particle size was utilised for analysis. September 2020: The 1 kg subsamples, including duplicates and blanks, were submitted to Intertek Genalysis analytical laboratory located in Maddington in Western Perth for drying, splitting to 100 g for pulverisation to a P90 -75 µm particle size in a zircon bowl. Auger samples were submitted to Intertek Laboratory in Maddington for drying, splitting, pulverisation in a zircon bowl. A subsample of 200 g with a 75 µm particle size is utilised for analysis. Allowance was made for duplication by drilling a twin auger hole located within 1 m of each other. Three twin holes were drilled representing 8% duplicate sample. The sample preparation methods are considered industry standard for silica sands. Records were kept describing whether the samples were submitted wet or dry. The laboratory sample size taken is appropriate for the sand being targeted.
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 (e.g., standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	July 2022: Not all samples were submitted for assay. 50 samples have been submitted to Intertek in Perth selected from ten drill holes representatively covering the area drilled. The analytical methods are the same that have been applied by Intertek to previous drill campaigns as described below. June 2021: For consistency Intertek was chosen to carry out the chemical analysis on the drill samples as they had also carried out analysis of Phase 1 and Phase 2 drill samples. The samples were pulverised in a zirconium bowl to eliminate any iron contamination The pulp grading was P90 75 microns.

Criteria	JORC Code explanation	Commentary
		The test method adopted was same as used previously. The samples were analysed by ICP-optical (atomic) emission spectrometry (test method 4ABSi/OE901). Samples for ICP analysis consisted of a four-acid digest including hydrofluoric, nitric, perchloric and hydrochloric acids in Teflon beakers. Silica is reported by difference. Inter-laboratory umpire analysis was carried out by submitting 31 pulps from Intertek Genalysis to the Bureau Veritas laboratory located in Canning Vale, Perth. The samples were analysed by mixed acid digest (MA100) followed by 17 elements by ICP-OES (MA101) and LOI (TG001). Silica was reported by difference. At the time of this release results were pending. March 2020: All the aircore samples prepared by Nagrom were analysed at the same facility. The assay method for multi-element analysis consisted of prepared samples fused in a lithium borate flux with lithium nitrate additive then analysed by XRF (test method XRF001). LOI was also carried out on each sample out at 1,000°C (test method TGA002). Auger samples were submitted to the Intertek Laboratory in Maddington, Perth, Western Australia. The assay method for multi-element analysis consisted of four-acid digest including hydrofluoric, nitric, perchloric and hydrochloric acids in Teflon beakers with inductively coupled plasma (ICP)-optical (atomic) emission spectrometry finish. Silica is reported by difference. March 2020: Inter-laboratory checking was carried out by submitting 28 prepared representative pulps (umpire samples) to the Intertek Laboratory located in Maddington. The samples were analysed by two methods, XRF (test method FB1/XRF20) and ICP-optical (atomic) emission spectrometry (test method 4ABSi/OE901). Samples for ICP analysis consisted of a four-acid digest including hydrofluoric, nitric, perchloric and hydrochloric acids in Teflon beakers. Silica is reported by difference. March 2020: The same 28 samples analysed by Intertek were also analysed by ICP at Nagrom' s laboratory. For analysis of Al2O3 and SiO2 the samples were fused with sodium peroxide and digested in dilute hydrochloric acid and then analysed by ICP (test method ICP005). All other elements were determined by ICP after dissolution in an acid mixture (test method ICP003). March 2020: Final analyses of the aircore samples were carried out at Intertek's laboratory using four-acid digest followed by ICP determination. The samples used consisted of pulps that were prepared by Nagrom.

Criteria	JORC Code explanation	Commentary
		September 2020: Intertek's analysis method for silica sands analysis consisted of four-acid digestion followed by silica sands 17-element ICP/OE analysis plus LOI at 1,000°C with SiO2 reported by difference. September 2020: Inter-laboratory umpire analysis was carried out by submitting 20 pulps, and 20 non-pulverised portions of the same samples, from Intertek Genalysis to the Bureau Veritas laboratory located in Canning Vale, Perth. The samples were analysed by mixed acid digest (MA100) followed by 17 elements by ICP-OES (MA101) and LOI (TG001). Silica was reported by difference. The extensive analysis by different laboratories and different methods are industry standard procedures and methods producing high level of confidence on the results produced. The ICP method is considered industry standard for reporting sand grades. No geophysical tools were utilised for the process.
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.*	July 2022: Assay results are pending. Samples include 3 standards and 3 duplicates. No twinning of holes was carried out. 2021: two twin holes were completed (T1 & T2) and another six holes were located adjacent to March 2020 drillholes. All drilling and sampling procedures were monitored on site by an independent geologist on a hole-by-hole basis. All primary information was initially captured in a written log on site, data entered, imported then validated and stored in a geological database. March 2020: There were no twin aircore holes. Twin holes were completed for three out of the 38 auger holes. September 2020: One of the September aircore holes was twinned; two of the March 2020 aircore holes were twinned. June 2021: Two twin aircore holes were drilled adjacent to holes March 2020 and September 2020 drill holes. An additional five drill holes were located close to March 2020 drill holes on section lines 6740900N and 6741400N. All drilling and sampling procedures were monitored on site by an independent geologist on a hole-by-hole basis. All primary information was initially captured in a written log on site by a geologist, data entered, imported then validated and stored in a geological database. March 2020: Additional check logging was carried by an independent geologist in Perth prior to samples being submitted to Nagrom for analysis. No adjustments to assay data have been performed. External review of umpire samples reported by Intertek and Bureau Veritas was carried out.

Criteria	JORC Code explanation	Commentary
Location of data points	*Accuracy and quality of surveys used to locate drill holes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* *Specification of the grid system used.* *Quality and adequacy of topographic control.*	July 2022: Holes were positioned using a Garmin 64S handheld GPS with an accuracy of +/- 5m. June 2021: Survey was undertaken by Hayhoe Surveying from Geraldton. Survey control was established from SSM Don49 with redundancy checks to SSM Don50. Equipment used was Trimble R10, RTK GPS with expected accuracies +/- 20mm horizontal and +/- 30mm vertical, relative to the survey control used. March 2020 & September 2020: The position of the aircore hole locations was determined by a Trimble R6 RTK global positioning system (GPS) in RTK mode. The survey was carried out by Heyhoe Surveys from Geraldton. Accuracy of 0.05 m relative to SSM Dongara 49. The position of the auger hole locations was determined by a GPS model Garmin GPS Map 64s with an accuracy of 5 m. The CRS used was GDA94/MGA Zone 50 (ex SSM DON49). The topography at the project site currently under exploration is flat to gentle undulating terrain. Site survey (Heyhoe Surveys) have produced a ± 50 cm DTM across the entire project area.
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.*	July 2022: drill hole spacing was approximately 400 to 500m N-S and from 900 to 1400m E-W. In the southern part of the exploration drilling was limited due to the impact of thick native scrub. The drill hole spacing, and style of deposit being investigated at a reconnaissance level is considered appropriate. 2021: main drill hole spacing was approx. 200m (east-west) and line spacing of approx. 200m (north-south). A closer spacing of approx. 100m x 100m was applied to a set of holes in the centre of the drill area. This comprised 20 holes or 35% of total holes drilled. All holes were drilled vertically, and the sample interval was 1m other than the first sample which was 0.5m with the first 0.5m not sampled. The data spacing and distribution is considered appropriate for Mineral Resource and Ore Reserve estimation, being the drill pattern layout was proposed by the independent resource consultant. September 2020: The aircore drillholes were spaced on an approx. 350–600 m (east west) x 480 m along strike (north-south) grid. March 2020: The aircore drillholes were spaced on an approx. 350–600 m (east west) x 480 m along strike (north-south) grid. September 2020: The aircore drillholes were spaced on an approx. 400m (east west) x 500m along strike (north-south) grid. $ drill holes at the southern end of the drill program were spaced at approx. 100mx 100m grid.

Criteria	JORC Code explanation	Commentary
		The auger drillholes were spaced on an approx. 400 m (east-west) x 800 m (north-south) grid. The adopted spacing at this time is sufficient based on the geological continuity of the sand formation being tested, and sufficient to be applied in Mineral Resource estimation. No sample compositing of holes has been 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.*	The orientation utilised for the aircore drilling and auger drilling campaigns represents the entire strike length of the aeolian dune within the initial prospective target area and as such is not expected to introduce any particular bias.
Sample security	*The measures taken to ensure sample security.*	All samples have been bagged and removed from site and are under the care of the company MD, and or senior geologist and or field sampling supervisor. July 2022: Subsamples for assaying were delivered directly to Intertek's laboratory in Perth at the completion of drilling. June 2021: Subsamples for assaying were delivered directly to Intertek's laboratory in Perth at the completion of drilling. Drill cyclone rejects were left on site awaiting final assay results and then will be moved to Dongara for storage in the company's locked and yarded shipping container. March 2020: Aircore samples initially stored a secure facility in Welshpool where sample reconciliation was undertaken before delivery to Nagrom Laboratory. Aircore samples were delivered to Nagrom in Kelmscott. The laboratory carried out a sample reconciliation which was audited against the sample submission sheet. September 2020: Aircore samples and returned samples and pulps from Intertek Genalysis are in the Welshpool facility along with chip trays from both the March and September drill programs. Auger samples were delivered to Intertek Maddington. The laboratory provided a sample reconciliation report which was audited against the sample submission sheet.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	Guidance was provided by an independent consultant, Andrew Scogings, on sampling lengths and hole spacings who carried out a site visit (February 2020) to inspect the drilling and sampling operations. Includes Phases 1 to 3 aircore drilling. July 2022: No audits or reviews undertaken at this time, assay data pending.

JORC Table 1 – Section 2: Reporting of Exploration Results

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.*	E 70/5221 comprises an effective land area of 56.8km^2 and was granted on 13 June 2019. A 1% royalty applies to all minerals sold from the Licence. The expiry date of the licence is June 2024. M 70/1406 was granted on the 18th of June 2021 and comprises an effective area of 10.4 km2 and covers the southern end of E70/5221 that is the current area of exploration operations. The expiry date of the lease is June 2042. Both the exploration licence and the mining lease are held by Perpetual Resources Pty Ltd. The southern section of the licence area which is the current focus of exploration is covered by Crown Land. The licence area north of the Crown land is Freehold/Leasehold land. No impediments on a licence to operate at time of reporting.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	Past exploration by others targeting heavy mineral sands. Refer to ASX release dated 6 February 2019, historical exploration.
Geology	*Deposit type, geological setting and style of mineralisation.*	Unconsolidated Quaternary coastal sediments, part of the Perth Basin. Aeolian quartz sand dunes overlying Pleistocene limestones and paleo-coastline.
Drill hole 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 downhole length and interception depth hole length. *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.*	The drillhole information and results for: July 2022: Refer to ASX release dated 5 August 2022 "Beharra North Reconnaissance Auger Drilling Successfully Completed". June 2021: can be found in ASX release dated 30 August 2021, "Phase 3 Air Core Infill Drilling Results Confirms High Grade White Silica Sad at Beharra". March 2002: can be found in ASX release dated 1 April 2020 and Appendix 2 Table 10 in a release dated 22 July 2020, "Maiden Mineral Resource Estimate, Beharra Silica Sand Project". September 2020: can be found in ASX release dated 7 December 2020 "recent Air-core Drilling Further Extends High-Grade Silica Sand at Beharra"

Criteria	JORC Code explanation	Commentary
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. 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.*	Aggregation methods included include a lower cut-off grade and results above average weighted. Intercepts can include one assay less than the bottom cut-off. Iron oxide bottom cut-off applied in reporting some results
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.* *If it is not known and only the downhole lengths are reported, there should be a clear statement to this effect (e.g., 'downhole length, true width not known').*	All holes were drilled vertical, and widths are therefore true.
Diagrams	*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 drillhole collar locations and appropriate sectional views.*	Refer to figures incorporated in the body of this report and announcements released to the ASX 22 July 2020, 7 December 2020, 30 August 2021, and 5 August 2022.
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.*	Refer to table 11 in ASX release dated 22 July 2020 and 7 December 2020 for all selected silica dioxide and other oxide assay results, and in Tables 3 to 6 in release dated 30 August 2021.
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.*	July 2022: No ground water was intersected. May 2022: 143 PSD samples were generated from all the geological subdomains including 37 from UW, 39 from LW, 27 from GA, 29 from GB, and 11 from Y, theses samples were made up of composites of drill samples that included 1, 2, or 3 samples per hole/domain with the average being about 2. Nagrom Laboratory in Perth carried out the gradings by wet sieving over 12 different size sieves being (all in millimeters) 1.18, 1.0, 0.71, 0.60, 0.50, 0.425, 0.355, 0.30, 0.212, 0.106, 0.075, and 0.038. Sieved material from 41 PSD tests were recomposited to include material ranges of -1mm +0.60mm, and -0.60mm +0.15mm and photomicrographs of these fractions were produced. Diamantina Laboratory in Perth carried out PSD tests on 20 duplicate samples. The results of PSD testing have not been released as at the date of this ASX announcement. Aircore drilling groundwater was intersected in all holes that exceeded 10 m depth. Water table generally occurred between 10 m and 12 m.

Criteria	JORC Code explanation	Commentary
		Average in-situ density (dry) determined to be 1.64 t/m^3 from six sites. Density locations were hand excavated to 0.4 m deep. The Instrument used was an Instrotek model Explorer. Tests were performed by Western Geotechnical & Laboratory Services. Particle size distribution (PSD) was carried out on eight representative samples on March 2020 Phase 1 samples. Tests were undertaken by Western Geotechnical & Laboratory Services. Additional PSD test were carried on Phase 2 drill samples and included 66 tests that resulted in a spread at 50% passing sizes of approx. 200 to 550 microns representing fine to medium grained sand. Initial metallurgical testwork was undertaken by Nagrom to establish possible process methods to provide a beneficiated product. Refer to ASX releases 30 January 2020 and 24 February 2020. Additional metallurgical testing was undertaken by IHC Robbins in Brisbane, refer to ASX releases 29 January 2021 and 22 April 2021. Petrological examination on UW and LW processed sand was undertaken and excerpts from his report dated July 2022 are included in this release. Petrological examination by Paul Ashley undertaken and reported on 18 February 2020. Additional air core resource drilling (Phase 2) was completed in November 2020, refer to ASX release 7 December 2020 for results. A Pre-feasibility Study (PFS) was completed and release to ASX, 17 March 2021. A Mineral Resource Update was completed and reported to ASX on 9 March 2021, and a Maiden Ore Reserve estimate was completed and released as part of the PFS. Desk top statistical analysis of June 2021 Phase 3 drill geochemistry was undertaken and reported refer to ASX release dated 31st March 2022, "Desktop Analysis of Beharra Drilling Data Suggests Significant Impurity Reduction Possible".
Further work	*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.*	Additional petrology on the remaining processed bulk sand products including the grey sands above and below the water table, GA and GB respectively, and the yellow sand, Y. Physical characterisation of the yellow sands intersected in the July 2022 auger drilling that occur in the northern part of E70/5221. No metallurgical methods have been reported in this release however "white only" sand metallurgical test work will commence shortly on a large composite sample derived from Phase 3 drill samples. Refer to ASX release 13 August 2021. With completion of the Phase 3 June 2021 drill program an updated Mineral Resource Estimate is being prepared.

Criteria	JORC Code explanation	Commentary
		Additional metallurgical test work in progress being carried out on selected white sand only composites. Refer to ASX release, 15 February 2022, "Sampling Underway for Bulk Metallurgical Test Work Targeting Multiple Zones within White Sand Horizon."