

## ASX RELEASE

14<sup>th</sup> September 2021

ASX:PEC

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#### Managing Director

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Sargon Hub

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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.**

## Commencement of Scoping Study for DSO Production Scenario at Beharra

### HIGHLIGHTS:

- Inbound interest received from a previously announced offtake partner (the Interested Party) relating to potential for sales of Direct-Shipping-Ore (DSO) white sand from Beharra.
- The Interested Party has informed Perpetual that it has undertaken additional impurity removal activities using further gravity and magnetic separation stages on product samples from Perpetual's PFS Study metallurgical program and has reported a further material reduction in Fe<sub>2</sub>O<sub>3</sub> (well beyond the 276ppm Fe<sub>2</sub>O<sub>3</sub> achieved by Perpetual in its Beharra PFS Study)
- Additional DSO sand samples (subject only to screening and hydro cyclone treatment), sourced from the recent white sand air core drilling program, have now been shipped to the Interested Party for further definitive testing.
- In response to this indicative interest, a DSO Scoping Study has been commenced, aimed at providing Perpetual with a strong economic understanding of this potential production scenario which will aid in ongoing negotiations and discussions around potential innovative commercial profit-sharing models.
- DSO Scoping Study has potential to create an ultra-low capital development pathway for Beharra, with DSO Scoping Study delivery expected in 10-12 weeks.

**Perpetual Resources Limited (ASX: PEC, "PEC", "Perpetual" or "the Company")** is pleased to announce that it has commenced a scoping study to analyse the economics of a Direct-Shipping-Ore (**DSO**) production scenario at Beharra. This DSO scenario is being analysed in response to inbound interest from a current (and previously announced) offtake partner, which has undertaken their own additional analysis on Beharra processed sand products (sourced from the PFS Study metallurgical program) and has concluded that the product can achieve

materially lower  $\text{Fe}_2\text{O}_3$  content (when compared to the 276ppm  $\text{Fe}_2\text{O}_3$  levels reported in the Beharra PFS Study), making Beharra sand potentially suitable for DSO sales. This may ultimately see Beharra sand servicing the fast-growing China PV-solar cell coverings market and other ultra-clear glass markets in the region.

Mr. Julian Babarczy, Executive Chairman of Perpetual, commented on the DSO Scoping Study initiative, “It is very pleasing to have received such strong interest in Beharra silica sand products from our various offtake partners, with initial testing by all parties resulting in strong confirmation as to Beharra’s high quality. This DSO initiative is particularly exciting for Perpetual, as it holds potential to unlock a low capital production scenario that takes advantage of the strong market dynamics and demand for high quality silica sand that currently exist in the market. We intend on working closely with this previously announced offtake partner to explore the optimal commercialization arrangement for this business, which may involve a pricing mechanism for Perpetual to access the final end product market sales price. The outcome of the DSO Scoping Study analysis is complementary and can be run in parallel with our likely Beharra PFS Update strategy and may result in potential for concurrent DSO and processed sand exports to the high growth Asian region in future years”.

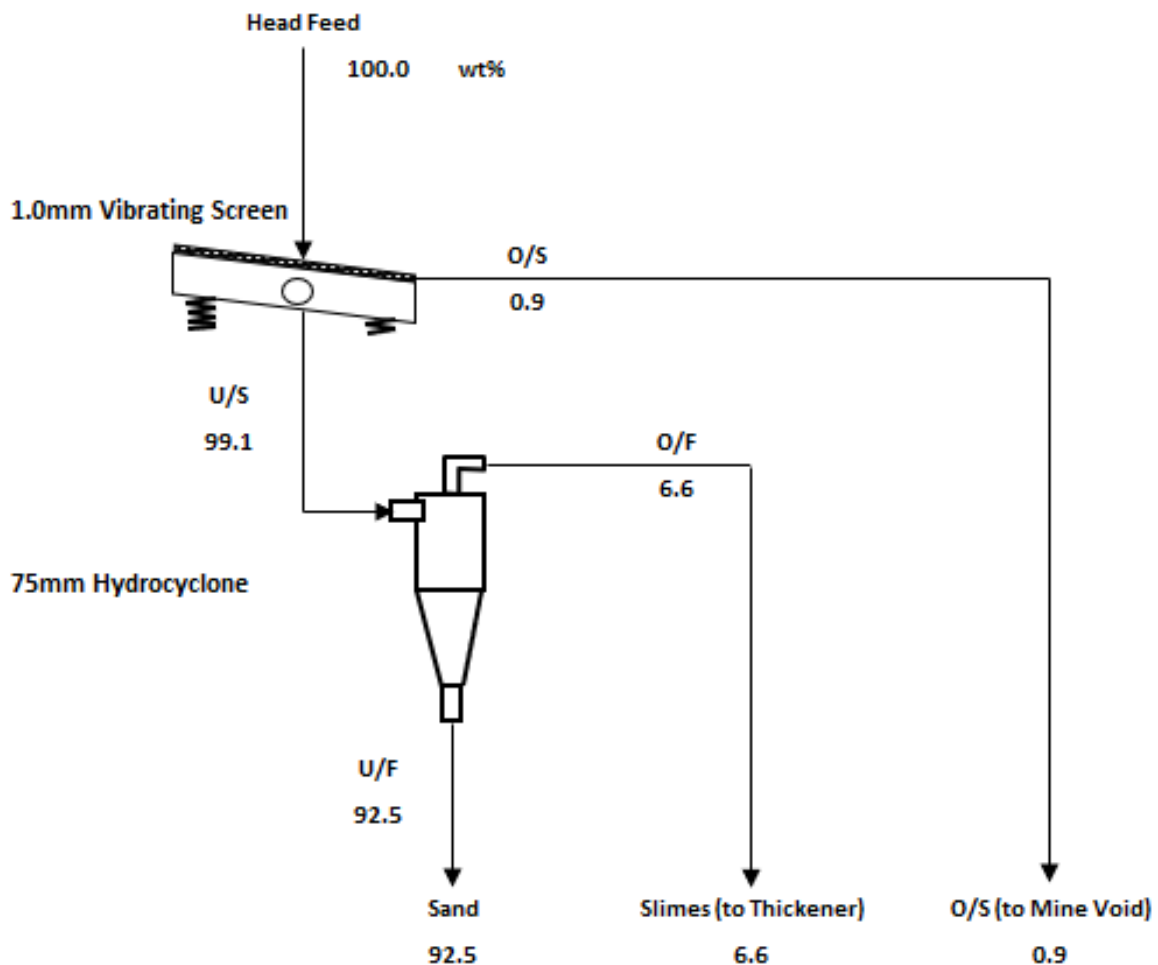
#### Inbound Interest from Existing Offtake Party Drives DSO Scoping Study Commencement

The Beharra DSO Scoping Study has been initiated in response to inbound enquiry from one of Perpetual’s existing and previously announced offtake partners. This Interested Party has previously been sent and has conducted independent testing and further impurity removal on samples of processed Beharra high grade silica sand that was the outcome of the Beharra PFS Study metallurgical program earlier in 2021 (please refer to ASX Announcement dated 29<sup>th</sup> January 2021). The starting point for the Interested Party’s initial testing was a product grading 99.6%  $\text{Fe}_2\text{O}_3$  with 276ppm  $\text{Fe}_2\text{O}_3$  (**Starting Product**).

According to the Interested Party, they undertook additional gravity and magnetic impurity removal stages on the Starting Product and has reported back to Perpetual the ability to achieve final product specification of even higher  $\text{SiO}_2$  grade with materially lower  $\text{Fe}_2\text{O}_3$  impurity levels (samples received back from the Interested Party are currently being tested in Australian minerals testing laboratories to independently confirm the end product specification achieved). Subject to Perpetual’s confirmation, the apparent achievement of a materially lower  $\text{Fe}_2\text{O}_3$  content in the final product has potential to place Beharra end product squarely in the market for ultra clear glass, including PV-solar cell glass coverings (as well as other ultra-clear glass applications), which is experiencing rapid growth due to the global expansion of solar capacity driven by a renewed ESG focus by governments and companies globally.

As previously announced to the market, white sand drilling samples taken from the recent 86-hole air-core program were sent to IHC Robbins for bulk metallurgical testing. As part of the full flow

sheet testing, the entire bulk sample was subjected to two initial stages, which are a vibrating screen followed by hydro cyclone treatment (please refer to Figure 1). This process generated a product stream at a 92.5% yield and generated product quality that is indicative of that which can be shipped by Perpetual under a DSO production scenario and is therefore considered a good representative product for further test work and ongoing commercial negotiations. A 40kg sample of this processed DSO product has now been shipped to the Interested Party for additional testing.



**Figure 1 – Flow sheet for DSO sample preparation undertaken by IHC Robbins**

#### Potential for Perpetual to Access Final Product Sales Price

Discussions with the Interested Party remain at an early stage and there is no formal agreement in place (other than the previously announced offtake agreement) that underpins Perpetual's efforts in exploring a DSO Scoping Study. Before progressing discussions with the Interested Party further, it is considered prudent for Perpetual to undertake its own economic modelling and analysis of a DSO production scenario, in the form of a DSO Scoping Study.

The DSO Scoping Study is expected to take 10-12 weeks for completion and once complete, will form the basis for more formal negotiations with the Interested Party, who is currently undertaking their own study to identify the costs and investment required to receive and upgrade Beharra DSO white sand in their own country.

Each party will then provide access to the respective study outcomes to enable an “open book” discussion relating to a potential commercial arrangement between the parties, with subsequent discussions relating to any potential agreement to commence at that point.

The current discussions with the Interested Party have explored the concept of Perpetual receiving a share of the end product sales price under a profit share arrangement (rather than just the sales price for DSO silica sand on an FOB Geraldton basis). This pricing scenario has been utilised successfully by numerous other Australian listed mining companies, such as Australian spodumene producers who have contracted with down-stream partners and negotiated a profit share arrangement on end product sales of lithium carbonate and/or hydroxide. It is this type of relationship that Perpetual believes will be optimal under a Beharra DSO sales scenario, although which requires thorough analysis as to the Australian-based capital and operating cost estimates, which will be the subject of the DSO Scoping Study.

Perpetual stresses that these discussions with the Interested Party remain at a preliminary stage and the outcome of the DSO Scoping Study and any subsequent economic modelling remains highly uncertain and any related commercial negotiations could result in a range of potential outcomes, including an uncommercial outcome for Perpetual. Perpetual is confident though, that discussions with the Interested Party are advanced and positive enough to warrant commencement of a DSO Scoping Study which will enable Perpetual to be armed with sufficient detail and economic modelling to progress negotiations.

#### DSO Scoping Study Details

The DSO Scoping Study has been designed to have the following broad objectives:

- Identify the DSO product or products that can be produced from Beharra white sand;
- Identify the process required to meet the required specification;
- Investigate and determine the costs of production on an FOB Geraldton basis;
- Develop a draft marketing / technical Material Safety Data Sheet (MSDS);
- Identify risks and opportunities associated with the DSO option;
- Assess fixed and working capital cost estimates to support production under a DSO scenario.

The DSO Scoping Study will be undertaken and project managed by Allied Project Development Pty Ltd, which undertook the project management role for the Beharra PFS Study and is engaged to provide project management services to future Perpetual studies linked to Beharra.

With the depth of investigation carried out during the recent Beharra PFS study, Perpetual believes a considerable amount of cost and other information can be readily applied to this DSO scenario. This will assist in providing increased certainty around the DSO Scoping Study outcomes as well as leading to a faster than normal turnaround time for delivery of the DSO Scoping Study.



## About Perpetual Resources Limited

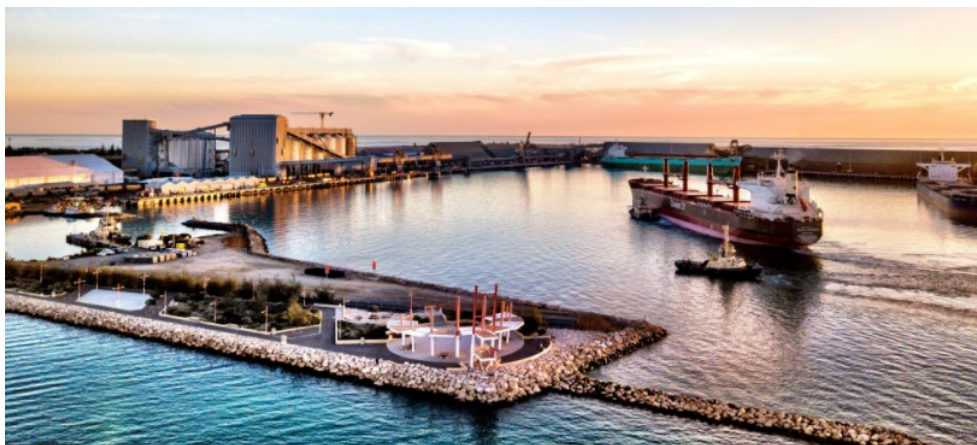
Perpetual Resources Limited (**Perpetual**) is a focused explorer of silica sands, aiming to produce high purity silica for export to the high growth Asian markets.

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.



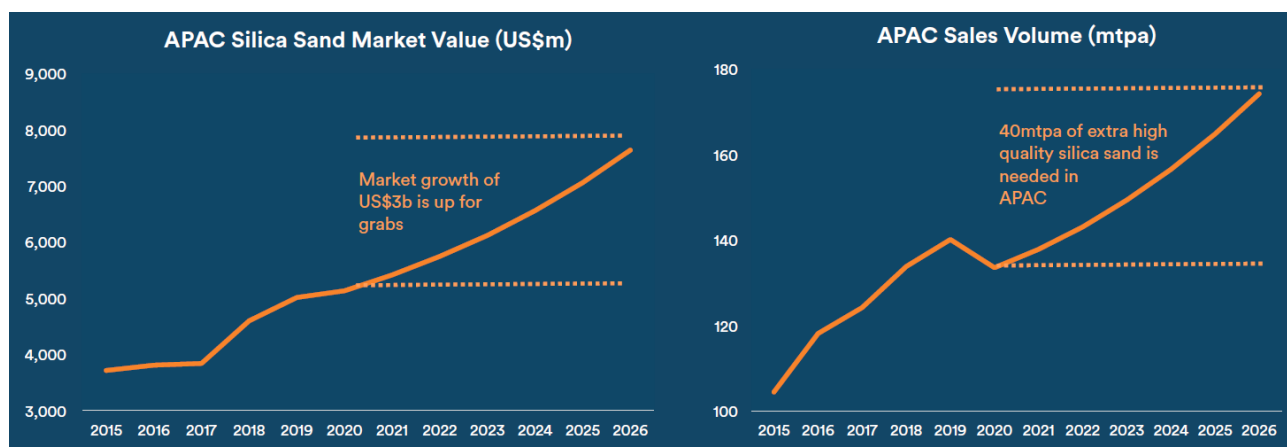
**Geraldton Port – Operated by Mid-West Port Authority**

Beharra comprises a granted mining lease, M70/1406, covering an effective area of 10.4km<sup>2</sup>, and a granted exploration license, E70/5221, covering an effective land area of 56.8km<sup>2</sup>. Extensive heavy mineral sands mining occurs to the south of Beharra, lime sands mining to the west and natural gas production to the south of the project area.

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 demonstrating compelling project economics for Beharra was released to the ASX in March 2021, along with a Maiden Ore Reserve.

## Silica Sands Market

Silica sands have an extensive range of uses, with lower purity (<99.5% SiO<sub>2</sub>) and lower priced applications including construction sand, proppant sand used in well fracturing, and foundry sand. With increasing purity (>99.5% SiO<sub>2</sub>) 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<sub>2</sub>O<sub>3</sub>). Significant expansion of solar PV cell manufacturing capacity globally is driving demand for silica sand with Fe<sub>2</sub>O<sub>3</sub> 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:

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**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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