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Beharra Pre-feasibility Study

ASX: PEC
Sustainable & Responsible Sand Production for the APAC region
March 2021

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Competent Persons Statement

The information in this report that relates to the March 2020 Exploration information 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 report of the matters based on this information in the form and context in which it appears.

The information in this report that relates to the Exploration information for the Beharra Project from September 2020 onwards is based on information compiled and fairly represented by Mr John Doepel, who is a Member of the Australasian Institute of Mining and Metallurgy and consultant to Perpetual Resources Limited. Mr Doepel 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 Doepel consents to the inclusion in this report of the matters based on this information in the form and context in which it appears.

The information in this report that relates to Mineral Resources is based on information compiled by Elizabeth Haren, a Competent Person who is a Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy and a Member of the Australian Institute of Geoscientists. Elizabeth Haren is employed as an associate Principal Geologist by Snowden Mining Consultants Pty Ltd, who was engaged by Perpetual Resources Limited. Elizabeth Haren has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Elizabeth Haren consents to the inclusion in the report of the matters based on her information in the form and context in which it appears.

The information in this report that relates to Mineral Resources is based on information compiled by Dr Andrew Scogings, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy, a Member of the Australian Institute of Geoscientists and is a Registered Professional Geologist in Industrial Minerals. Andrew Scogings is employed as an associate Executive Consultant Geologist by Snowden Mining Consultants Pty Ltd. Dr Scogings has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Dr Scogings consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to the Beharra Ore Reserve is based on information reviewed or work undertaken by Mr Frank Blanchfield (FAusIMM). Mr Blanchfield is an employee of Snowden and has relied on Perpetual for marketing, environmental, permitting, and financial modelling and any costs not relating to mining and metallurgy. The mine design and mining costs and economic viability of the project were assessed and completed by Snowden under his direction. Mr Blanchfield has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the preparation of mining studies to qualify as a Competent Person as defined by the JORC Code 2012. Mr Blanchfield consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The scientific and technical information in this report that relates to process metallurgy is based on information reviewed and work completed by Arno Kruger (MAusIMM), who is a metallurgical consultant and employee of IHC Robbins. The metallurgical factors including process flowsheet design and costs and assumptions for the bulk aircore sample that relate to Mineral Resources have been reviewed and accepted by Mr Kruger. Mr Kruger has sufficient experience that is relevant to the type of processing under consideration and to the activity being undertaken to qualify as a Competent Person as defined by the JORC Code 2012. Mr Kruger consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Contents

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Sand facts

"For construction alone, the world consumes roughly 40 to 50 billion tons of sand on an annual basis. That's enough to build a wall of 27 meters high by 27 meters wide that wraps around the planet every year"

"The global rate of sand use — which has tripled over the past two decades partially as a result of surging urbanization — far exceeds the natural rate at which sand is being replenished by the weathering of rocks by wind and water"

"We just think that sand is everywhere. We never thought we would run out of sand, but it is starting in some places"

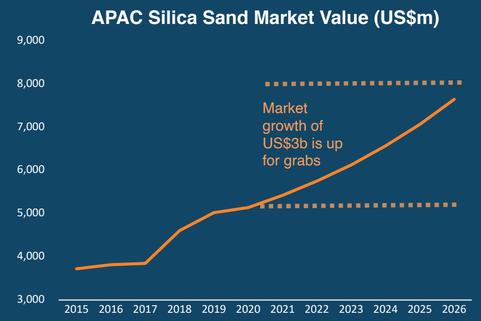
"Sand is the world's most consumed raw material after water and an essential ingredient to our everyday lives"

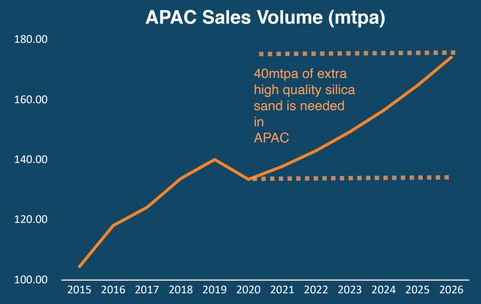
"Sand is perceived as cheap, available and infinite and that is partly because the environmental and social costs are pretty much not priced in"

Source: CNBC.com news publication, 5th March 2021
(https://www.cnbc.com/2021/03/05/sand-shortage-the-world-is-running-out-of-a-crucial-commodity.html)

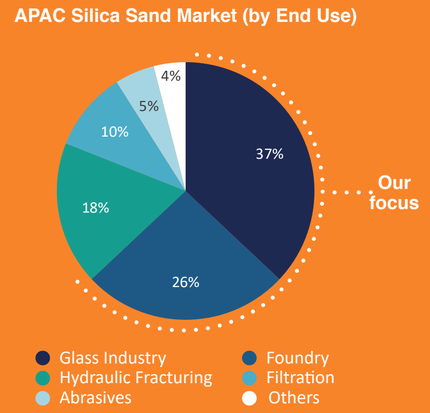
Asia Pacific Silica Sand Market Overview

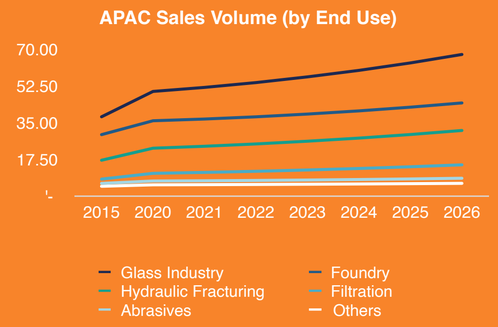
Asia Pacific: The fastest Growing Silica Sand Market in the world



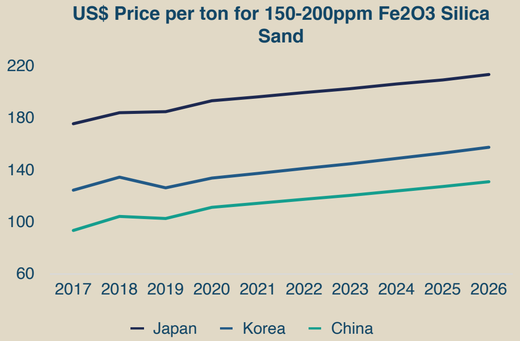


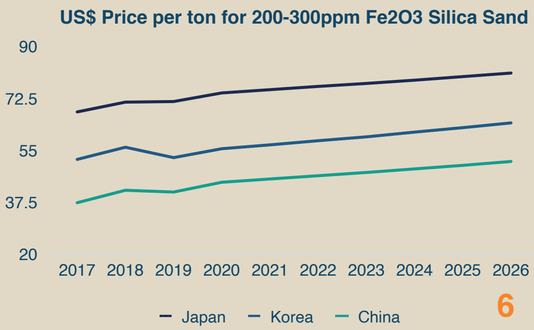
Beharra is targeting the largest silica sand markets in APAC





Structural change in price has been underway for a decade





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

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Beharra: Compelling Project Economics

Mid West region's lowest impurity and **highest quality product**

Optionality around end product specifications allows significant **revenue optimization**

Potential for very **high margins** and scope for project optimization and expansion

Located in WA, Australia's best and **most friendly** mining jurisdiction

On the doorstep of the **fastest growing** silica sand markets in the world

Strong relationships with local stakeholders, team of leading silica sand experts and experienced Board

Beharra Project	Base case
Post-Tax NPV*	$236m
Post-Tax IRR*	77%
Production	1.5mt/yr
Initial Capex	$39m
Revenue (/ton)#^	A$67 FOB
Opex (/ton)^	A$43 FOB
Yr 2 EBITDA~	A$37m

Note: For further information and full detail on all assumptions, please refer to ASX announcement titled, "Maiden Ore Reserve and Outstanding Beharra PFS Result Update" dated 17th March 2021.

**Assumes 40% gearing*
#Refer to slide 17 for further information
^In nominal terms
~First year of full production

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Beharra: A leading Regional Silica Sand Project

- Lowest known impurity project in Mid West Region
- Simple and sustainable mining

- Simple metallurgy
- Standard flow sheet & processing

- Existing road network
- Sealed national highway proximal
- High quality partners secured

- Bulk port accessible
- Open access arrangements
- Negotiations underway

- Compelling distance to high growth markets
- Multiple buyers in multiple end markets

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Project Reserves/Resources

Beharra Indicated Mineral Resource February 2021[1]

Sand	Volume (Mm^3)	Density	Tonnes (Mt)	SiO_2%	Al_2O_3%	TiO_2%	Fe_2O_3%	LOI%
Yellow	8.1	1.64	13.2	98.2	0.50	0.23	0.23	0.51
White	76.7	1.64	125.8	98.6	0.41	0.36	0.23	0.21
Total	**84.8**	1.64	**139.0**	98.6	**0.42**	**0.35**	**0.23**	**0.24**

Note: (Mt) = Million tons

Beharra Probable Ore Reserve February 2021[2]

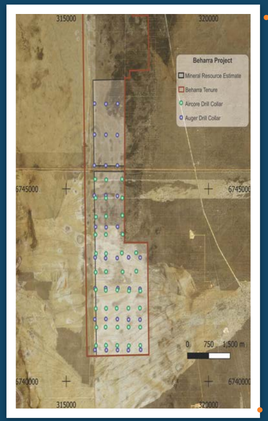
Sand	Tonnes (Mt)	SiO_2%	Al_2O_3 ppm	TiO_2 ppm	Fe_2O_3 ppm	LOI%
Insitu	64.1	98.6	4,240	3,460	1,950	0.235
Saleable Product	47.6	99.6	1,789	369	276	0.100

Note 1: Million tons are rounded to one decimal place. Grades are rounded to 3 significant figures.
Note 2: No cut off is applied to the silica sand product.
Note 3: The Insitu and Saleable Product are not additive, and the Saleable Product is a portion of the Insitu sand tonnage.

Potential Products - ICP Analysis[3]

Sample ID	Tonnes (Mt)	SiO_2%	Al_2O_3 ppm	TiO_2 ppm	Fe_2O_3 ppm	LOI%
Beharra Premium	74.4	99.6	1,789	369	276	0.14
Beharra Special #27	6.3	99.7	1,405	300	235	0.13
Beharra Special #46	**68.0**	99.5	**1,825**	**375**	280	**0.14**

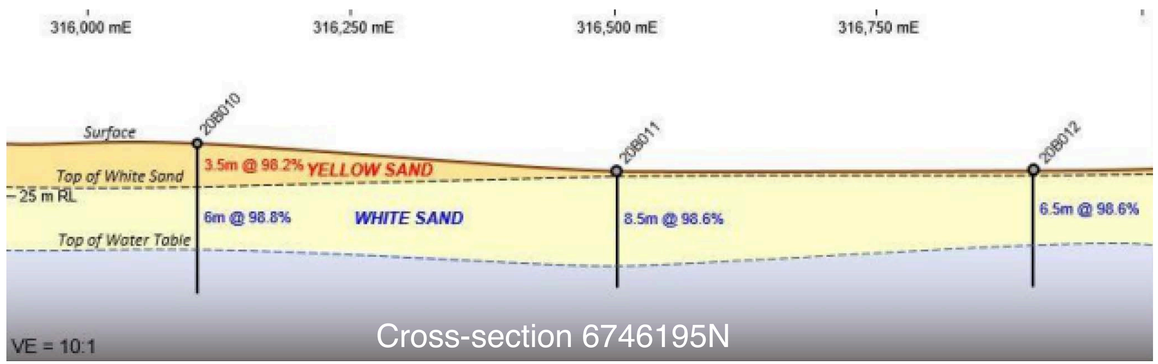
[1] Please refer to ASX announcement titled, "Upgraded Mineral Reserve Estimate - Beharra", dated 9th March 2021.
[2] Please refer to ASX announcement titled, "Maiden Ore Reserve and Outstanding Beharra PFS Result Update", dated 17th March 2021.
[3] Please refer to ASX announcement titled, "Exceptional Metallurgical Test Results - Beharra", dated 29th January 2021.



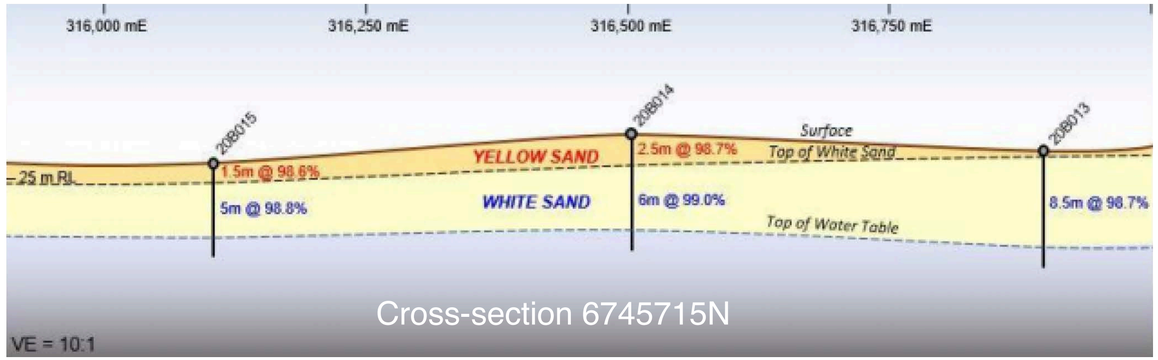
- Mineral Resource Estimate and Ore Reserve prepared by Snowden Mining Consultants Pty Ltd
- Comprises drill holes from 3 drill campaigns:
  - February 2019: 38 auger holes across the southern extent of the Beharra tenement
  - March 2020: 40 aircore holes drilled to the North and South of Mt Adams Rd
  - September 2020: 32 aircore holes drilled to the North and South of Mt Adams Rd
- All reserve and resource calculations relate to material above the water table

Project Geology

- **Simple geology with clearly defined horizons of white and yellow sand**
- **White sand is pervasive and represents >90% of the Beharra Resource**
- **Results in straight forward mining operations with minimal operational complexity**



Cross-section 6746195N



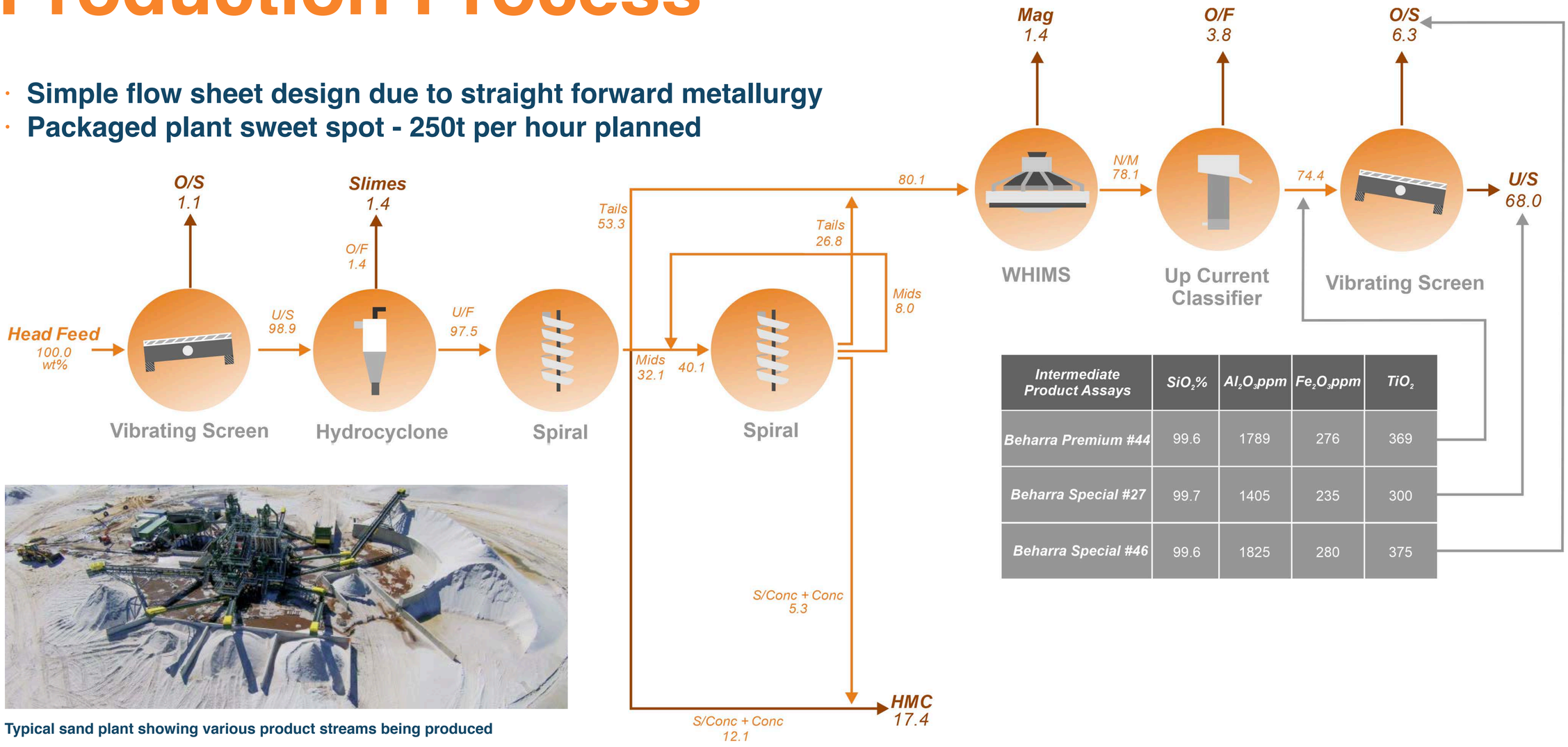
Cross-section 6745715N

>12m Intersection of White Sand separated into 1m intervals from September 2020, **Beharra Drill Program***

**For further information, please refer to ASX announcement titled, "Conclusion of Air-Core Drilling Program at Beharra", dated 1st October 2020, and ASX announcement titled, "Air-Core Drilling Results - Beharra", dated 7th December 2020.*

Production Process

- Simple flow sheet design due to straight forward metallurgy
- Packaged plant sweet spot - 250t per hour planned



Intermediate Product Assays	SiO_2%	Al_2O_3ppm	Fe_2O_3ppm	TiO_2
Beharra Premium #44	99.6	1789	276	369
Beharra Special #27	99.7	1405	235	300
Beharra Special #46	99.6	1825	280	375

Typical sand plant showing various product streams being produced

Note: For further information please refer to ASX announcement titled, "Exceptional Metallurgical Test Results - Beharra", dated 29th January 2021.

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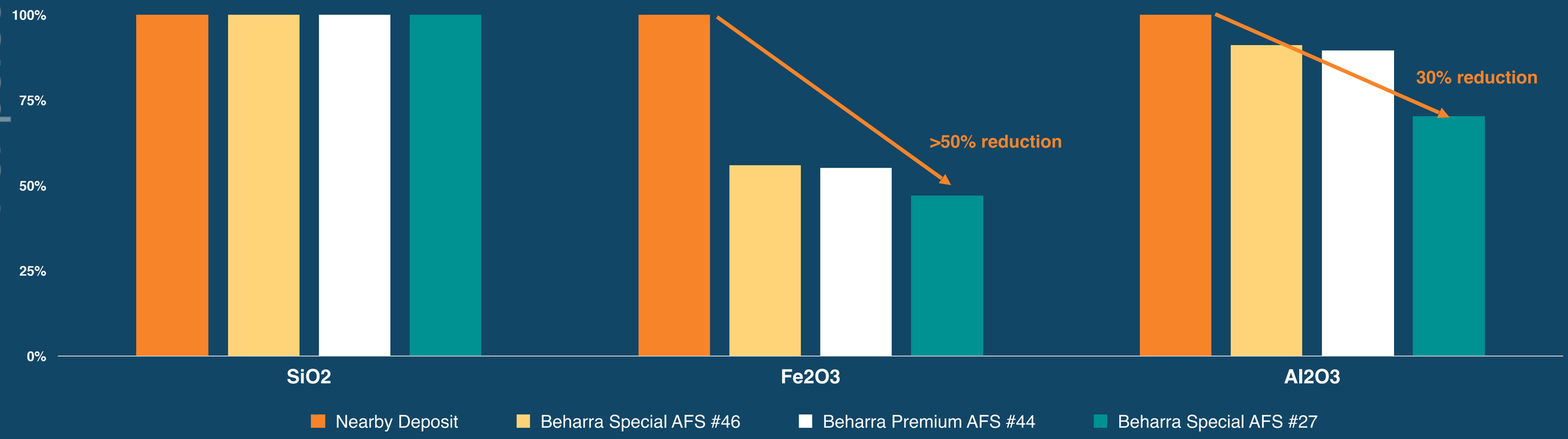
Standout Metallurgy

Beharra has demonstrated, through a rigorous bulk sample metallurgical program, that it can beneficiate to the lowest known impurity profile in the Mid West region of WA, suggesting potential for premium pricing and greater market acceptance.

Comparison of Key Attributes of Beharra Product Suite to Nearby Deposit[1]

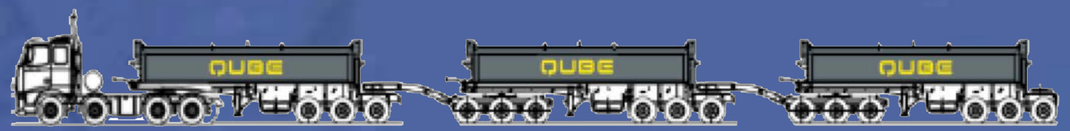


[1]*Source: PEC test results (see ASX Announcement dated 29th January 2021) and VRX Silica's Arrowsmith North technical Sheet (see https://vrxsilica.com.au/assets/Arrowsmith-NF500.pdf)*

Tier 1 Infrastructure Regional

Beharra is one hour by high quality road to Geraldton Port, underpinning the economic viability of Beharra.

RAV7.3 – PBS Super Triple



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Tier 1 Infrastructure
In Practise

Internal haul road to Mt Adams Rd

Mt Adams Rd connects directly to the sealed Brand Highway

Sealed highway to Narngalu Bulk Storage Facility

Short haul to Geraldton Port for APAC export

Project Economics : Overview

Beharra represents a compelling financial proposition, exhibiting low capex, high margins and a very strong payback period. This is made possible by regionally leading metallurgy, ideal location proximal to tier 1 infrastructure and a first-class study and executive team.

Category	Base Case
Post Tax, NPV_{10} - Ungeared	$231m
Post Tax IRR – Ungeared	55%
Post Tax, NPV_{10} - Geared to 40%	$236m
Post Tax IRR – Geared to 40%	77%
Payback Period – Post Tax	2 years
Exchange Rate (USD/AUD)	0.75
Total Life of Mine Sales (undiscounted)	$4,983m
Total Life of Mine EBITDA (undiscounted)	$1,714m
Total Life of Mine Cashflow (after tax and financing costs)	$1,131m
Start-up Capital	$39m
Total Life of Mine Capital	$77m
Life of Mine Costs (FOB Geraldton) including Royalties^	$43.07 / product ton
Production Target (Life of Mine)	48 million tons
Production Target (Annual once ramped up)	1.5 million tons
Probable Ore Reserves @ 98.6% SiO2	64 million tons
Ore Reserve life	32 years
Indicated Resource @ 98.6% SiO2	139 million tons

Note: US$50/t FOB Geraldton sales price used.
Please refer to slide 17 for further information.

Note: For further information please refer to ASX announcement titled, "Maiden Ore Reserve and Outstanding Beharra PFS Result Update", dated 17th March 2021.
^In nominal terms

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Project Economics : Capex

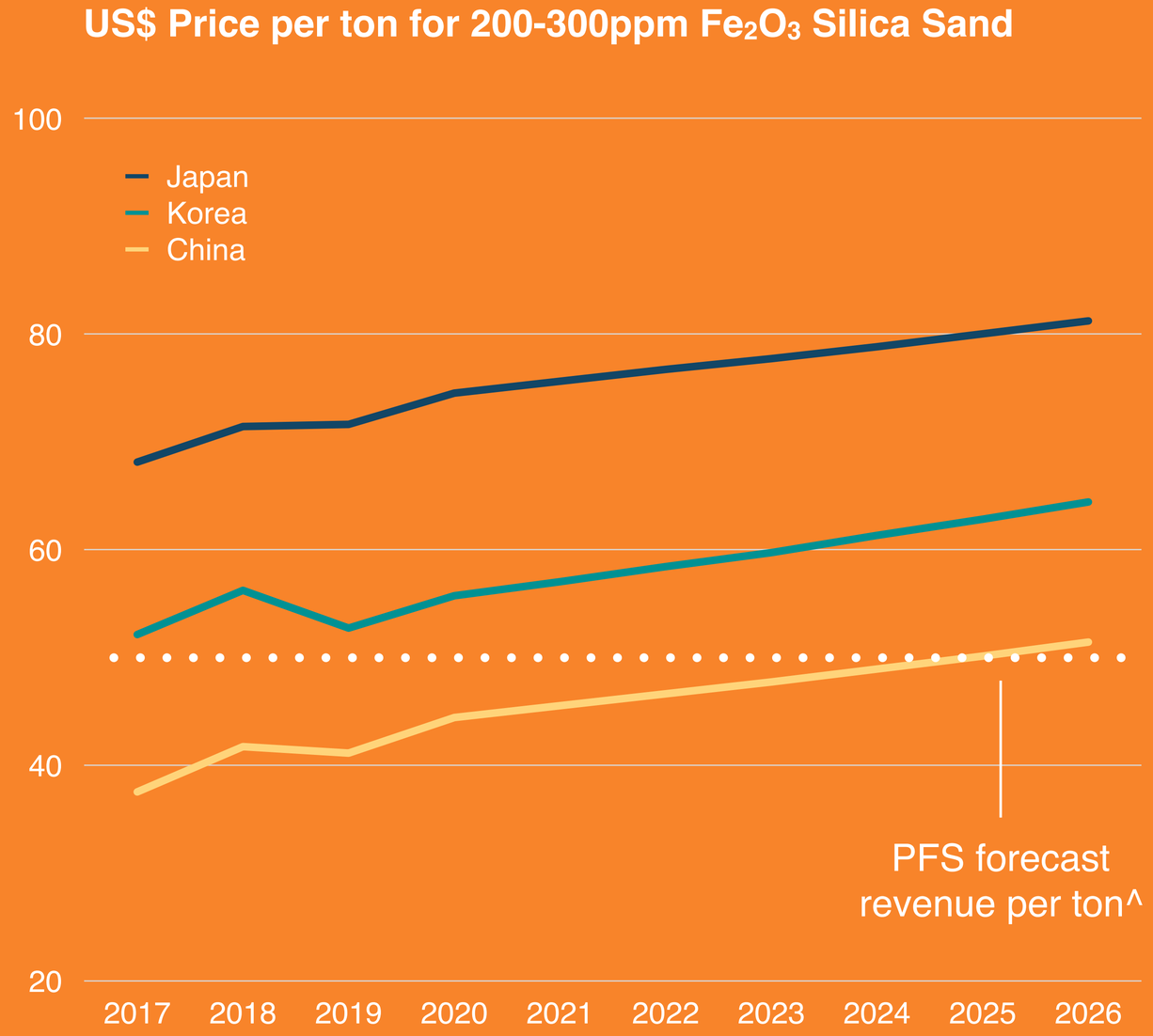
Final Capex for Beharra includes a comprehensive list of capital budget items, encompassing all known and expected costs.

Item (Base Case)	Cost (A$)
Wet Processing Plant	$19.1m
On Site Infrastructure **- Buildings & Amenities** **- Power Station** **- Roads & Hardstand** **- General Site Civils & Earthworks** **- Fuel Storage & Distribution** **- Mobile Equipment** **- Weigh Bridge**	$3.5M
Off-Site Infrastructure (Bore field, site access roads)	$9.3m
Indirect Costs (PCM Fees)	$2.3m
Other **- Insurances** **- Commissioning spares** **- Operational spares** **- Owners costs**	$1.3m
Contingency	$3.5m
TOTAL	A$39m

Note: For further information please refer to ASX announcement titled, "Maiden Ore Reserve and Outstanding Beharra PFS Result Update", dated 17th March 2021.

Project Economics: Revenue Per Ton

Conservative sales price assumed to ensure seamless market entry and significant upside potential.



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

^In nominal terms

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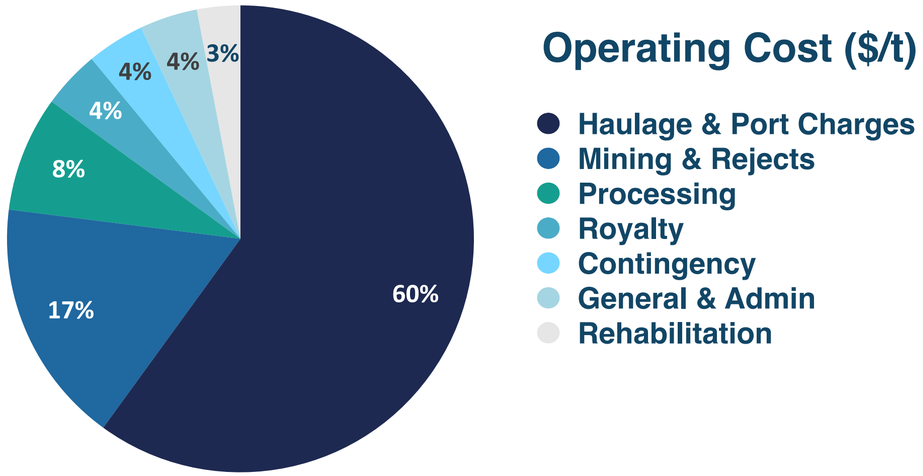
Project Economics : Opex



Opex item	A$ per product ton	% of total
Product Haulage & Port Charges	$26.09	60%
Mining & Rejects	$7.33	17%
Processing	$3.31	8%
Royalty	$2.30	4%
Contingency	$1.88	4%
General & Admin	$1.58	4%
Rehabibilitaion	$0.58	3%
Total Operating Cost	A$43.07	

Perpetual's strategy is to operate with maximum flexibility, aiming to respond to the expected positive changes in market demand. As a result, a felexible cost base is assumed, with potential to reduce opex over time through strategic reinvestment of cashflows into core plant and equipment and/or additional logistics infrastructure.

Note: For further information please refer to ASX announcement titled, "Maiden Ore Reserve and Outstanding Beharra PFS Result Update", dated 17th March 2021.

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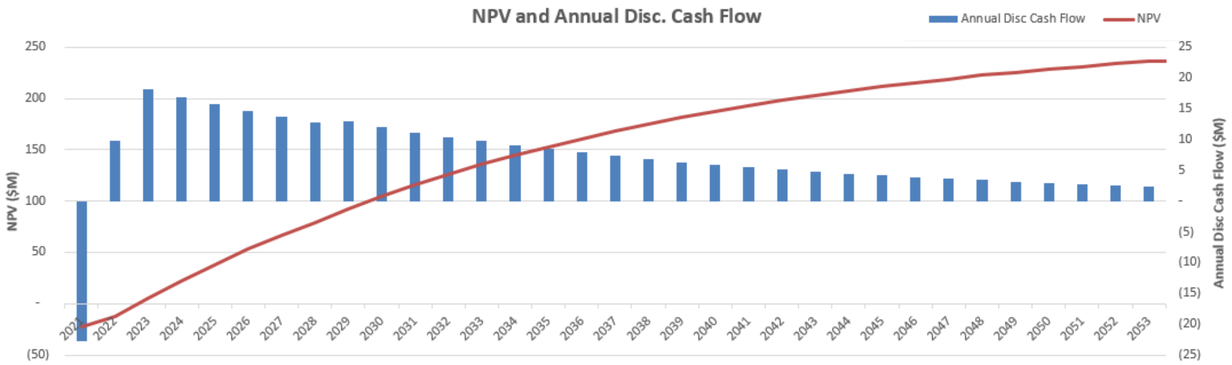
Project Economics : Detailed Overview

Beharra commands a compelling mining project investment case.



NPV Geared*	NPV Ungeared	IRR Geared*	IRR Ungeared
$236m	$231m	77%	55%

**Assumes 40% gearing*
Note: For further information and full detail on all assumptions, please refer to ASX announcement titled, "Maiden Ore Reserve and Outstanding Beharra PFS Result Update" dated 17th March 2021.

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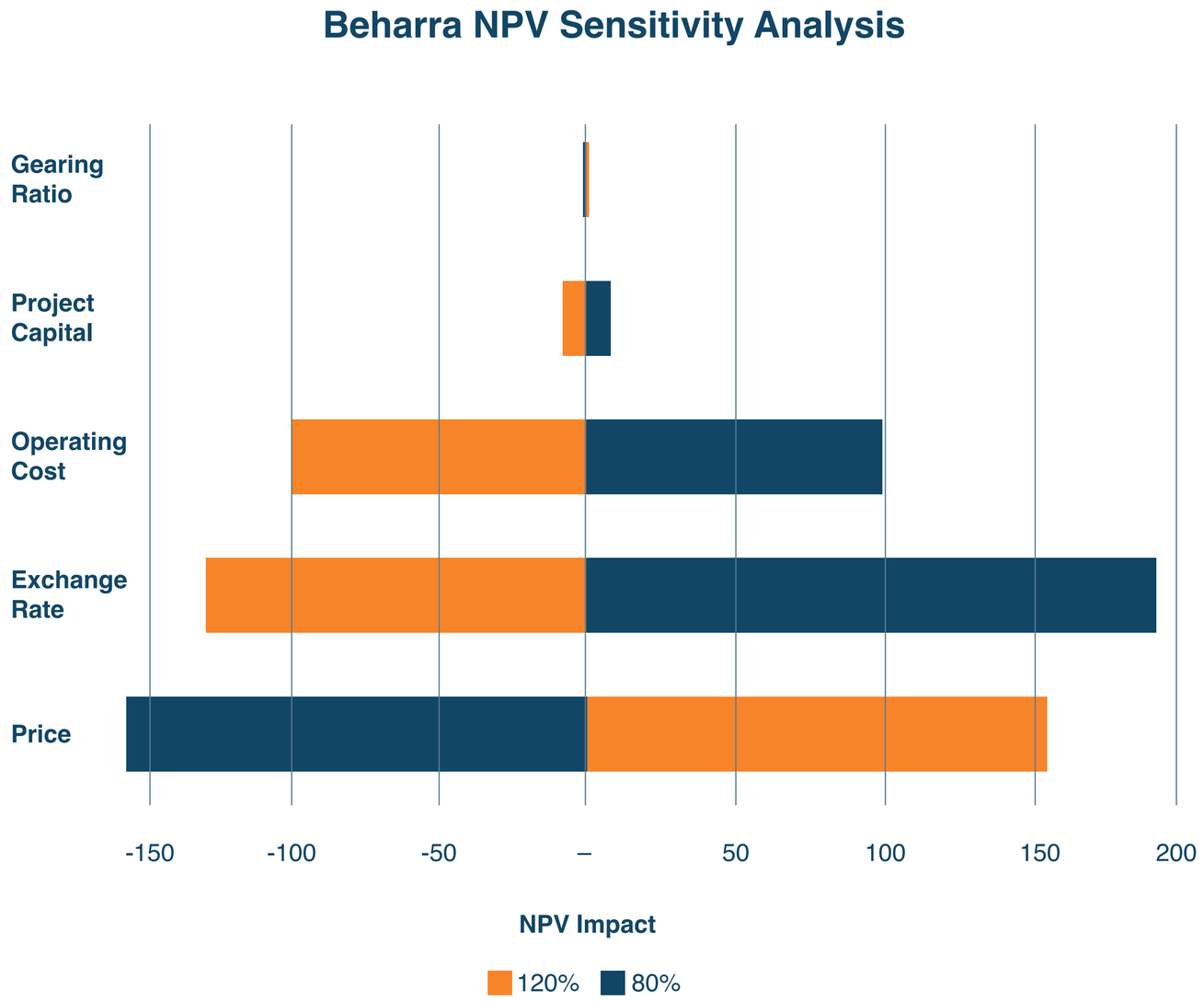
Project Economics : Sensitivity Analysis

The Beharra project economics are highly resilient to changes in various key scenarios. Revenue per ton optimization is anticipated to deliver the greatest upside potential to project economics and is a big focus of management effort.



Note: Sensitivity analysis reflects a change of +/- 20% in the key variables, calculated in isolation.

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Future Opportunities for Enhancement

Campaign mining and processing

Freight alternatives such as Road + Rail or Rail only

Direct port access as part of Mid West Ports expansion project

Potential simplifying of the metallurgical flowsheet to lower capital and operating costs

Selective processing of the white sand horizons

Dry mining and slurrification option (hydro-transport of ROM)

Conversion of capex to opex or shared costs with other operators

Investigations of expansion cases in terms of increased plant throughput

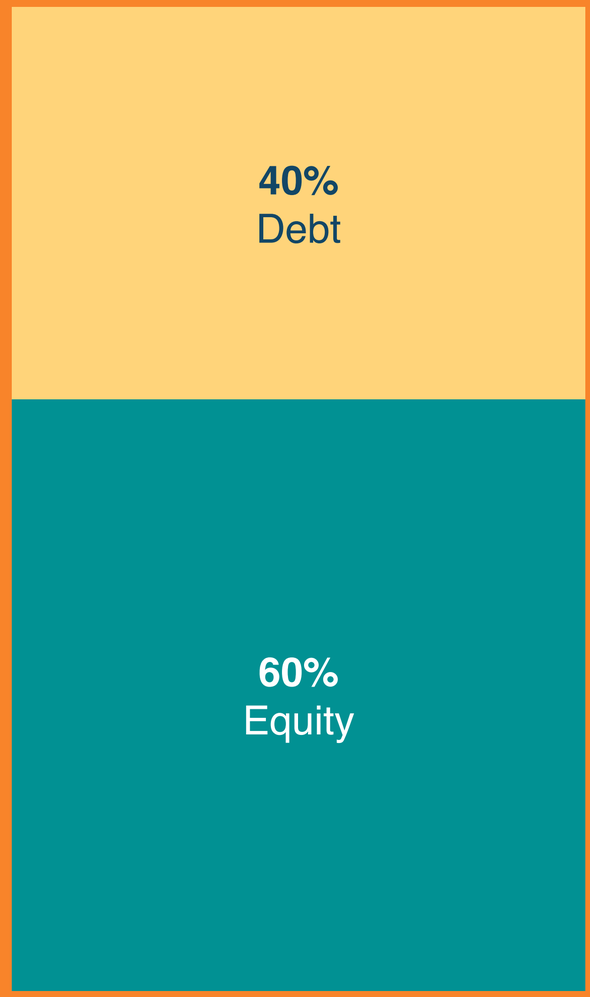
Project Study Team and Stakeholders

Project Funding

Perpetual anticipates strong interest in debt financing for up to 40% of the total Beharra Project capital costs, with the remainder anticipated to be funded by equity and/or strategic investor interest.

Key to securing the debt will be further engagement with end users and potential for binding offtake agreements to underpin debt payback period.

Indicative Funding Split



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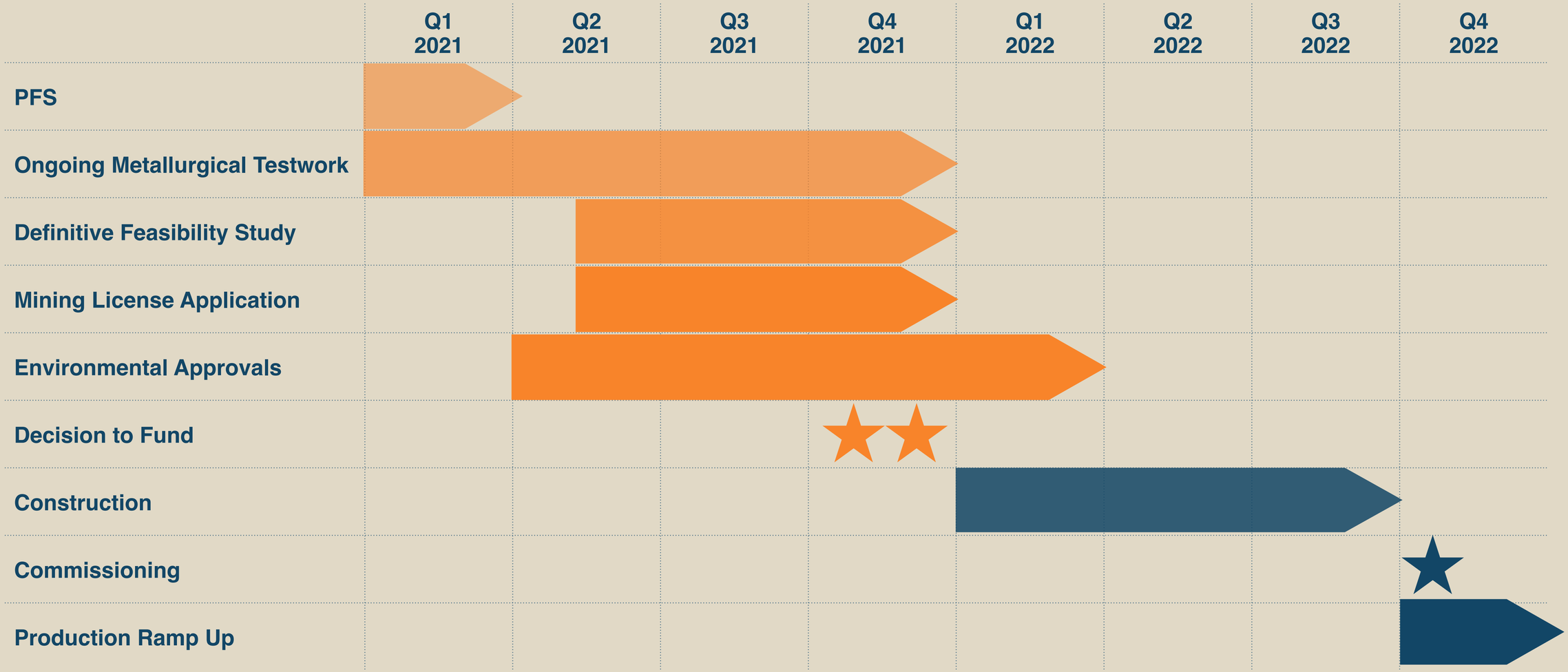
Beharra Development Timeline



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Conclusion

The Mid West Region's lowest impurity silica sand project

- The Mid-West Region's pre-eminent silica sand resource and project
- Ideally located proximal to tier 1 infrastructure
- Compelling project economics confirming a long life, low capital and high margin operation
- Significant scope for project expansion

Strong project economics

- 1.5mtpa silica sand sales generates an NPV of $236m and a compelling IRR of 77%*
- Project economics are resilient to key sensitivities
- Project upside exists though optimization of revenue per ton
- Annual EBITDA of A$37m in first year of full operation (Year 2)

Located on doorstep to APAC, the world's fastest growing market

- Minimal road upgrades to ensure sealed road transport from site to port
- Deep water port with direct access to major high value APAC markets

Strong study team and consultants

- Expert multi-disciplinary team providing experienced advice on project development and study options
- Decades of experience in developing sand-related projects throughout Australia
- Deep sand processing knowledge and expertise

Experienced Board and Leadership Team

- Highly credentialled Board of Directors with significant project execution and operations experience, as well as deep project and company funding experience
- Management team with significant project execution expertise
- Growing owners' team with select additions expected to further strengthen capabilities

Rapidly advancing project

- Maiden Mineral Resource Estimate delivered mid 2020
- PFS delivered in 1Q 2021
- Maiden Mineral Reserve Estimate delivered 1Q 2021
- DFS planning to be commenced immediately, with permitting and planning underway in parallel
- Targeting rapid production start in line with strong market demand

Assumes 40% gearing

“We give such little thought to it… But sand and gravel build the foundations of our economies.”

— United Nations Report on Sand and Sustainability, 2019

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