# ASX MEDIA RELEASE

Havilah Resources
A New Mining Force in South Australia

16 December 2020

# 2020 AGM TECHNICAL REVIEW PRESENTATION

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Havilah Resources Limited (**Havilah** or **Company**) is pleased to circulate the 2020 Technical Review presentation that will be presented at the 2020 Annual General Meeting today by Dr Chris Giles, Havilah's Technical Director and Mr Richard Buckley, Havilah's Projects Manager.

The presentation provides a summary of Havilah's corporate and technical achievements during 2020 and its strategic planning for the year ahead. Havilah is well placed going into 2021 and shareholders can look forward to an exciting year of news flow on exploration and mineral project advances.

The presentation will also be available on the Company's website at www.havilah-resources.com.au.

This release has been authorised on behalf of the Havilah Resources Limited Board by Mr Simon Gray.

For further information visit www.havilah-resources.com.au
Contact: Dr Chris Giles, Technical Director, on (08) 7111 3627 or email info@havilah-resources.com.au
Registered Office: 107 Rundle Street, Kent Town, South Australia 5067

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# Havilah Resources

**An Advanced Stage 100% Owned Multi-Commodity Minerals Portfolio**

## AGM 2020 TECHNICAL PRESENTATION

# Cautionary and Competent Person's Statements

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## Cautionary Statement

The information contained in this presentation is not financial product advice. The presentation is for information purposes and is of a general and summary nature only. Neither Havilah Resources Limited (Havilah) nor any member of the Havilah Group of companies, gives no warranties in relation to the statements and information in this presentation. Investors should seek appropriate advice on their own objectives, financial situation and needs.

It is not recommended that any person makes any investment decision in relation to Havilah based on this presentation. This presentation should be read in conjunction with the latest Annual Report together with any announcements made by Havilah in accordance with its continuous disclosure obligations arising under the *Corporations Act 2001*.

This presentation contains certain statements which may constitute 'forward-looking statements'. Such statements are only predictions and are subject to inherent risks and uncertainties which could cause actual values, performance or achievements to differ materially from those expressed, implied or projected in any forward-looking statements Havilah disclaims any intent or obligation to update publicly any forward-looking statements, whether as a result of new information, future events or results or otherwise. Investors are cautioned that forward-looking statements are not guarantees of future performance and investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein.

Given the ongoing uncertainty relating to the duration and extent of the global COVID-19 pandemic, and the impact it may have on the demand and price for commodities on our suppliers and workforce, and on global financial markets, the Company continues to face uncertainties that may impact its operating and financing activities.

## Competent Person's Statement

The information in this presentation that relates to Exploration Targets, Exploration Results, Mineral Resources and Ore Reserves is based on data compiled by geologist, Dr Chris Giles, a Competent Person who is a member of The Australian Institute of Geoscientists. Dr Giles is Technical Director of the Company, a full-time employee and is a substantial shareholder. Dr Giles has sufficient experience, which is relevant to the style of mineralisation and type of deposit and activities described herein to qualify as a Competent Person as defined in the 2012 Edition of *'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'*. Dr Giles consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears.

Information for the Kalkaroo Ore Reserve & Mineral Resource and the Mutooroo Inferred cobalt & gold Mineral Resources complies with the JORC Code 2012. All other information was prepared and first disclosed under the JORC Code 2004 and is presented on the basis that the information has not materially changed since it was last reported. Havilah confirms that all material assumptions and technical parameters underpinning the reserves and resources continue to apply and have not materially changed. Except where explicitly stated, this presentation contains references to prior exploration results and JORC Mineral Resources, all of which have been cross-referenced to previous ASX announcements made by Havilah. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant ASX announcements.

# 2020 snapshot

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- **Focused on West Kalkaroo** – drilling, feasibility study and mine permitting considerably advanced.
- **Positive investor sentiment** – allowed capital to be raised to fund Havilah's work programs through to the end of 2021.
- **Rise in gold price** (and improved gold recoveries) – made the West Kalkaroo gold open pit a potentially viable option.
- **Higher commodity prices** – bullish sentiment also impacts copper and iron ore prices.
- **Rare earth element (REE) potential identified** – copper-gold mineralisation in the Curnamona Craton is frequently associated with elevated REE. Positive research outcomes from the study of REE recovery from West Kalkaroo oxidised gold ore.
- **Importance of critical minerals recognised** – Havilah is well positioned with its cobalt, REE, tungsten and copper mineralisation to benefit from Government initiatives to develop new supplies.
- **COVID-19 pandemic** – since Kalkaroo is in South Australia, Havilah was able to continue drilling on its own Kalkaroo pastoral property unimpeded by interstate travel restrictions. Regional exploration drilling programs postponed out of courtesy for Native Title holders will be resumed in 2021.

**Positive outcomes achieved in spite of many external challenges**

# 2021 objectives – using funds recently raised

**West Kalkaroo gold open pit – priority objective**

- Advance feasibility study and permitting work with the aim of commencing gold mining development activities during 2021 (*noting that Havilah retains a high degree of optionality as the large scale Kalkaroo copper-gold sulphide production could potentially be ramped up at any time if the required capital of A$332 million became available via major mining company or other investor participation*).
- Ongoing resource infill drilling and resource expansion drilling along major mineralised fault zones.
- Continuation of collaborative research to determine the best recovery options for REE from West Kalkaroo oxidised gold ore.

**Mutooroo copper-cobalt-gold project**

- Advance PFS work to value add, which will include a major component of additional resource drilling and process plant design and testing.

**Iron ore assets**

- Advance mining scoping study for an initial low cost open pit mining development at Grants Basin that seeks to utilise the Port Playford transshipment facility, planned to be available from mid-2022, and existing rail capacity.
- JORC resource delineation drilling at Grants Basin for the outcropping highest grade ore zones in support of the scoping study.
- Detailed testing of cost-efficient dry ore processing methods using representative iron ore samples.

**Regional exploration** (within >16,000 km$^2$ of highly prospective 100% owned tenements in the Curnamona Craton)

- Testing of high conviction regional exploration targets that could lead to new discoveries, building on a track record of exploration success
  - **Benagerie Dome** copper-gold (plus cobalt, REE, tungsten): Numerous untested targets plus current drilling at Croziers prospect.
  - **Mutooroo** copper-cobalt-gold: Follow-up ore-grade copper in 1960's drillholes and very high copper/cobalt surface geochemical anomalies.
  - **Jupiter MT anomaly**: Follow-up MT survey to define major fault zone and initial high risk, high reward drilling target.

**Corporate**

- Corporate overheads have been greatly reduced, but significant fixed costs such as share registry and ASX listing fees remain.
- Substantial costs to maintain Havilah's 16,000 km$^2$ tenement area (>$500,000 per annum).

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**Funds raised will be prudently invested to generate positive shareholder returns**

# Advanced mineral projects summary

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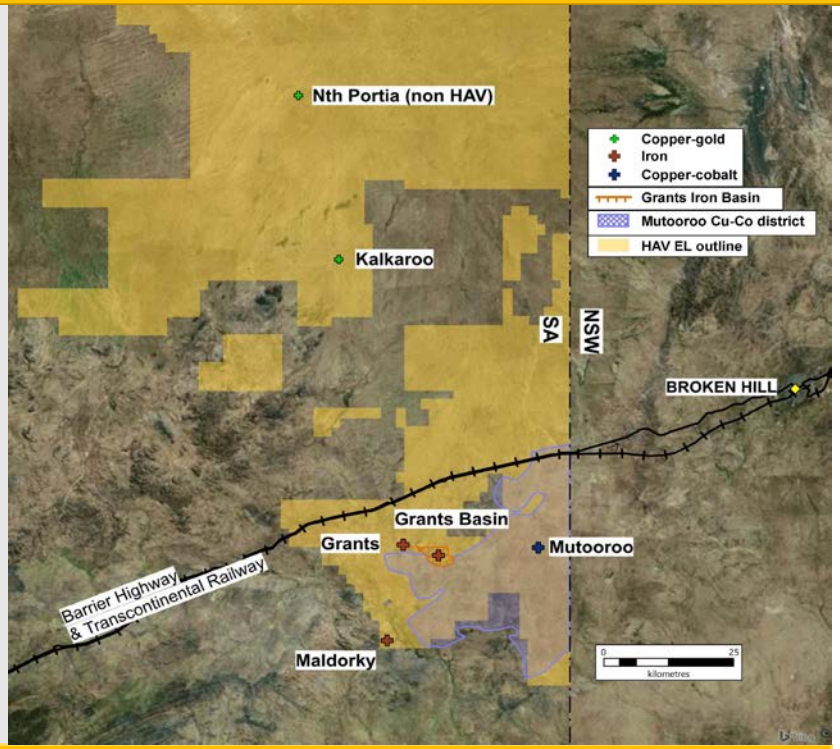
## Copper – Gold – Cobalt – (REE)

- **Kalkaroo:** Positive independent prefeasibility study (PFS) confirms Kalkaroo as one of the largest undeveloped open pit copper deposits in Australia based on 100 Mt Ore Reserve (contains 474,000 tonnes copper & 1.4 million ounces gold, 90% Proved) at a CuEq grade of 0.89%. Potential for by-product cobalt, moly and REE concentrate production (refer to havilah-resources-projects.com/kalkaroo).
- **Mutooroo:** Comparatively high grade open pit and underground copper deposit (1.53% Cu) with appreciable cobalt. One of the highest grade sulphide cobalt deposits (0.16%) with associated copper in Australia (refer to havilah-resources-projects.com/mutooroo).
- High exploration upside for expansion of both resources.

## Iron ore

- **Grants & Maldorky:** combined JORC resources of 451 Mt in proximity to railway line; amenable to efficient upgrading to 65% Fe product.
- **Grants Basin:** Exploration Target* 3.5-3.8 billion tonnes 24-28% Fe in only 25% of the iron ore basin, also potentially upgradable.




**A valuable multi-commodity minerals portfolio**

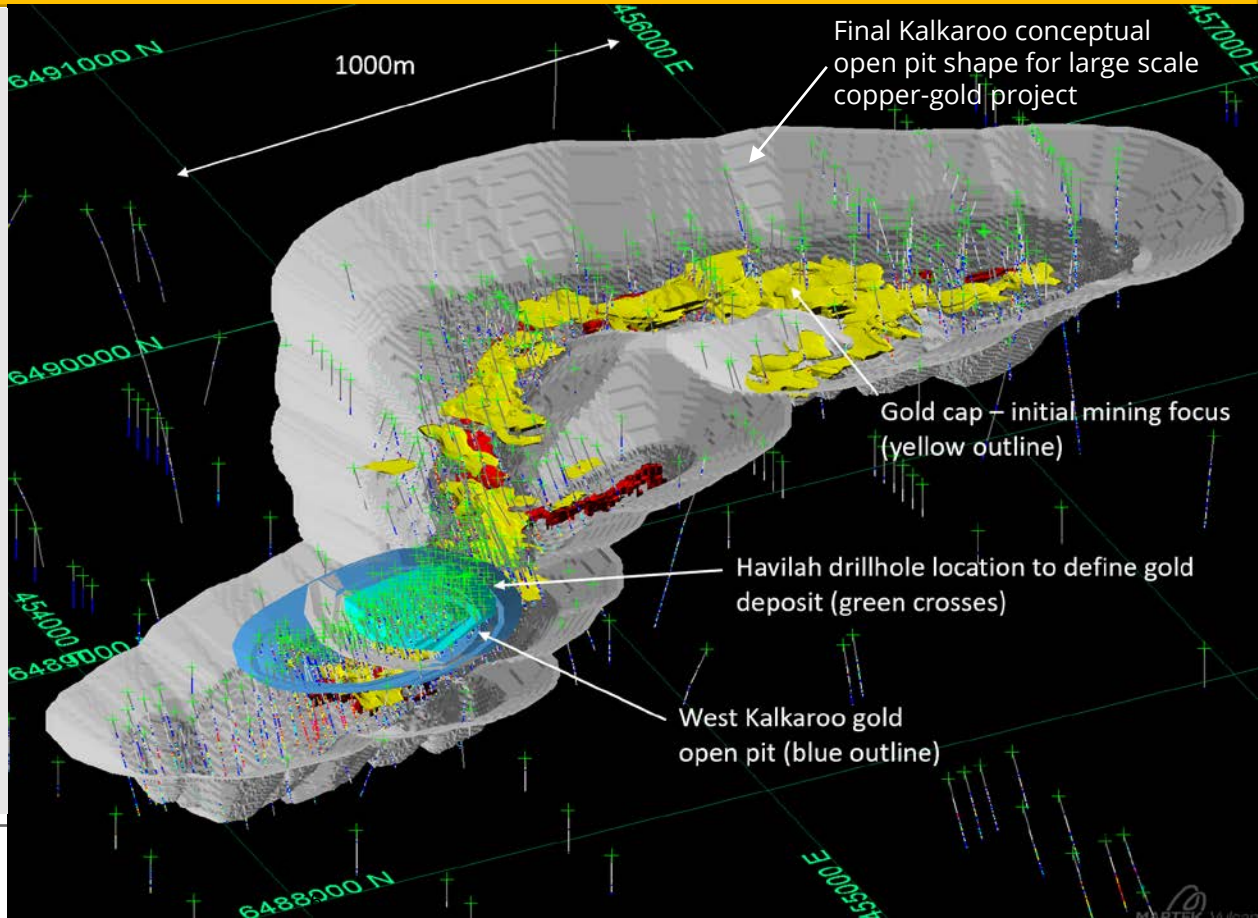


Havilah Resources

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

# West Kalkaroo gold open pit

- Initial development plan is to commence a lower capital gold open pit (blue), with approximately 80,000-90,000 ounces of gold production over 3 years.
- This would mine the shallowest and lowest cost gold ore via an open pit mine and a gravity and cyanide leaching gold recovery processing plant.
- It is a lower capital and lower risk start up alternative that takes advantage of the current rise in gold price.
- This is only a small part of the deposit and could be followed by the much larger long term copper-gold development as shown by the grey open pit outline, subject to finalisation of the updated PFS and raising of the required capital.

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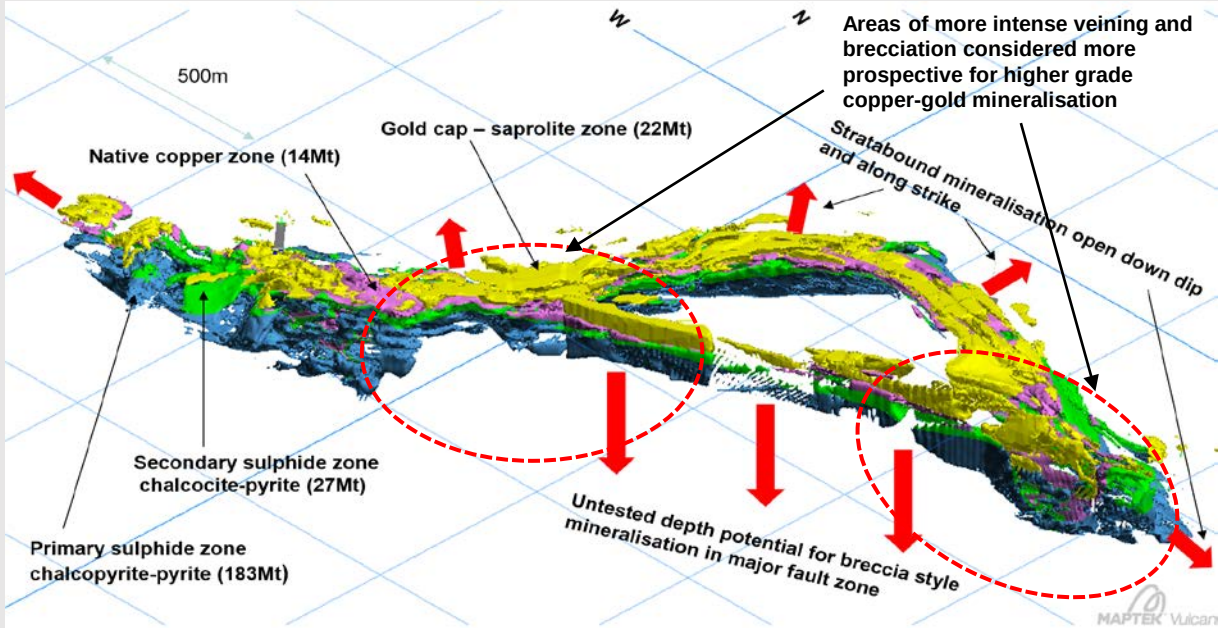
# Why Kalkaroo is a valuable mineral asset

- Kalkaroo is one of the largest undeveloped open pit copper deposits in Australia containing a JORC Ore Reserve (90% Proved) of over 100 Mt at a CuEq grade* of 0.89% or 890,890 CuEq tonnes.
- There are very few such large undeveloped open pit copper deposits in Australia with similar JORC Ore Reserves.
- Kalkaroo is also a large gold deposit in its own right, containing over 3.1 million ounces of gold in JORC Mineral Resources, which provides a natural hedge to copper in times of economic uncertainty.
- Kalkaroo is largely undrilled below 200 metres depth. There are good prospects to increase the copper-gold resources as the mineralisation is open along strike and at depth (see image at right).
- At current long term copper and gold prices there is high potential to convert the large Inferred Resource component (110 million tonnes) to additional JORC Ore Reserves with deeper drilling.
- Associated cobalt, REE and molybdenum are possible by-products that could provide additional sources of revenue.




*CuEq calculation is based on the following formula: CuEq = Cu ore reserve grade + (value 1g/t Au /value of 1% Cu x Au ore reserve grade). Assumptions: gold price USD1,900 /oz, copper price USD6,500/tonne, overall metallurgical recoveries for gold and copper are the same based on Kalkaroo PFS, ore metal grades are from published Kalkaroo JORC Ore Reserve table. It is considered that both copper and gold are saleable.

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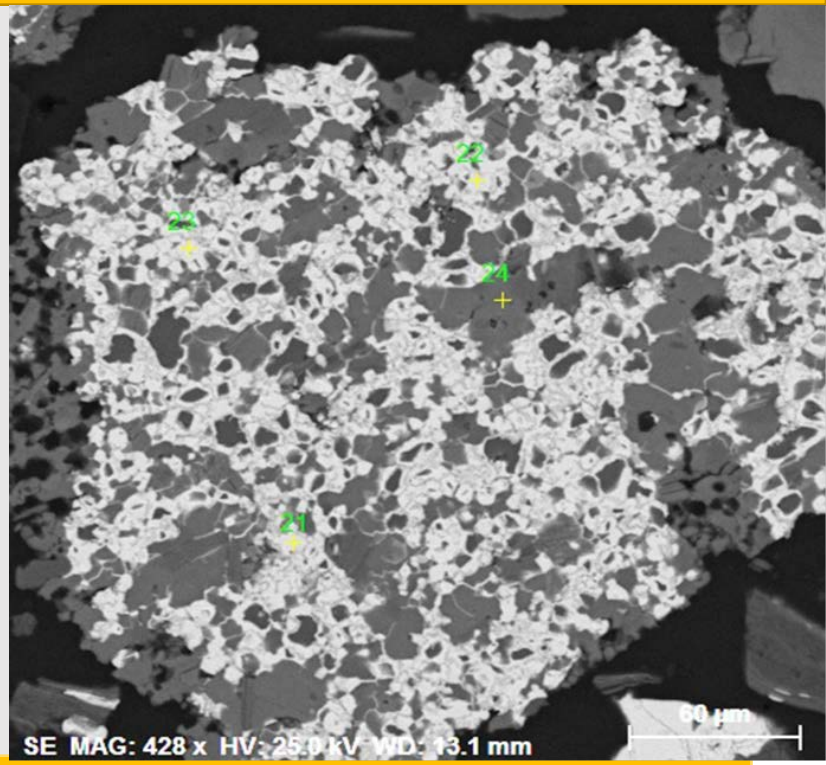
# Kalkaroo as future potential source of REE

- REE are critical minerals that are vital components in a wide range of 'green energy' and other applications (e.g. wind turbines, electric vehicles, rechargeable batteries, mobile phones), whose supply is dominated by China (refer to Critical Minerals Prospectus 2020).
- Widespread elevated levels of the higher value REE are associated with copper-gold-cobalt mineralisation in the Curnamona Craton.
- Research collaboration with the University of South Australia has identified a high value REE mineral (bastnasite - a carbonate-fluoride mineral) in the West Kalkaroo oxidised gold ore.
- The main research objective is to determine if this REE mineral can be economically recovered in a mineral concentrate as a by-product of the copper and gold recovery process and so provide an additional valuable revenue stream for the West Kalkaroo gold open pit and assist in meeting the western world's REE self-sufficiency.
- The scanning electron microscope image on the right shows bastnasite (white) intergrown with clay minerals (grey) in a gold ore sample from West Kalkaroo, which shows good promise for economic recovery.




**The mineralising processes in the Curnamona Craton concentrated high value REE**

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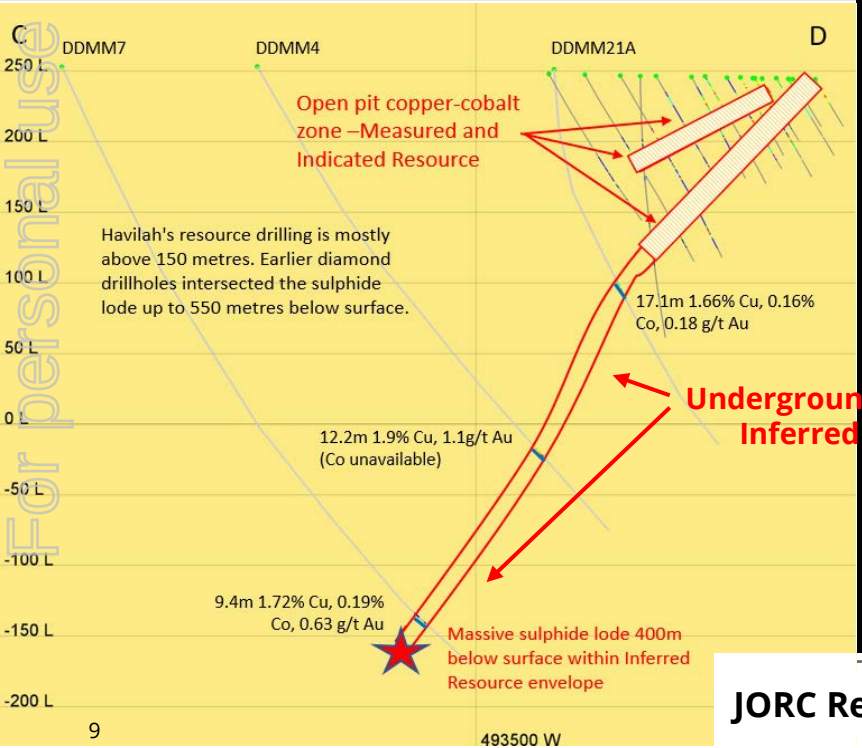
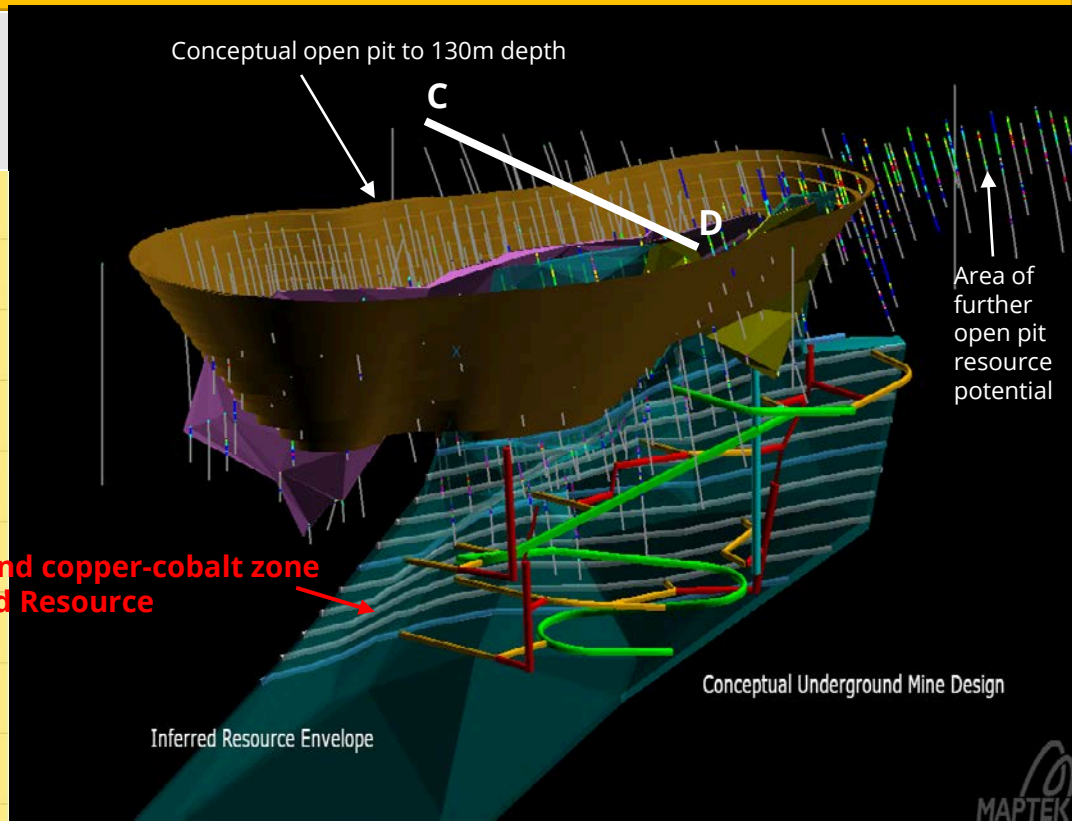
# Mutooroo copper mine project

## One of the highest grade sulphide cobalt deposits with associated copper in Australia

Concept is for an initial shallow open pit exploiting >1.3% Cu and 0.14% Co Measured and Indicated resources followed by underground mining of higher grade Inferred resources >1.7% Cu and 0.17% Co (refer to JORC resource table at end).




| JORC Resources: | Copper 195.0 Kt | Cobalt 20.2 Kt | Gold 82.1 Koz |
|---|---|---|---|

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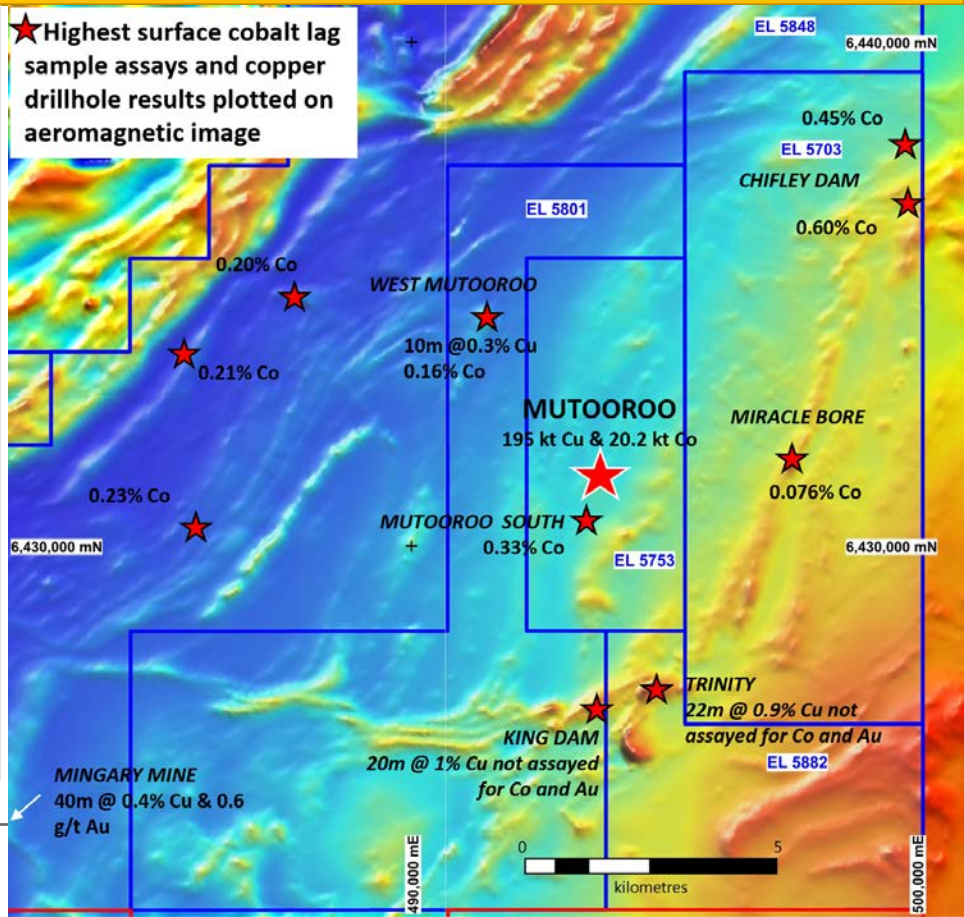
# Exceptional prospectivity in many under-explored targets

- Mutooroo lies within a very prospective copper-cobalt district that has high discovery potential for additional resources at nearby prospects.
- On adjacent 100% owned exploration licences are numerous prospects dating from the1960's with potentially ore-grade copper drilling intersections, but never subsequently assayed for cobalt and gold nor followed up with drilling (e.g. West Mutooroo, King Dam and Trinity).
- Widespread high copper and cobalt results in Havilah's surface lag geochemical sampling. Peak cobalt grades are at economic levels (eg 0.45%-0.60% Co at Chifley Dam, 0.33% Co at Mutooroo South, 0.20-0.23% Co in areas to the west). There is invariably associated highly anomalous copper (ASX release 7 December 2018).
- Previous ore-grade copper-gold intersections by Minotaur in two drillholes at Mingary Mine, including 40m @ 0.60 g/t Au & 0.40% Cu and 16m @ 1.07 g/t Au & 0.26% Cu in a folded sheared mineralised horizon.

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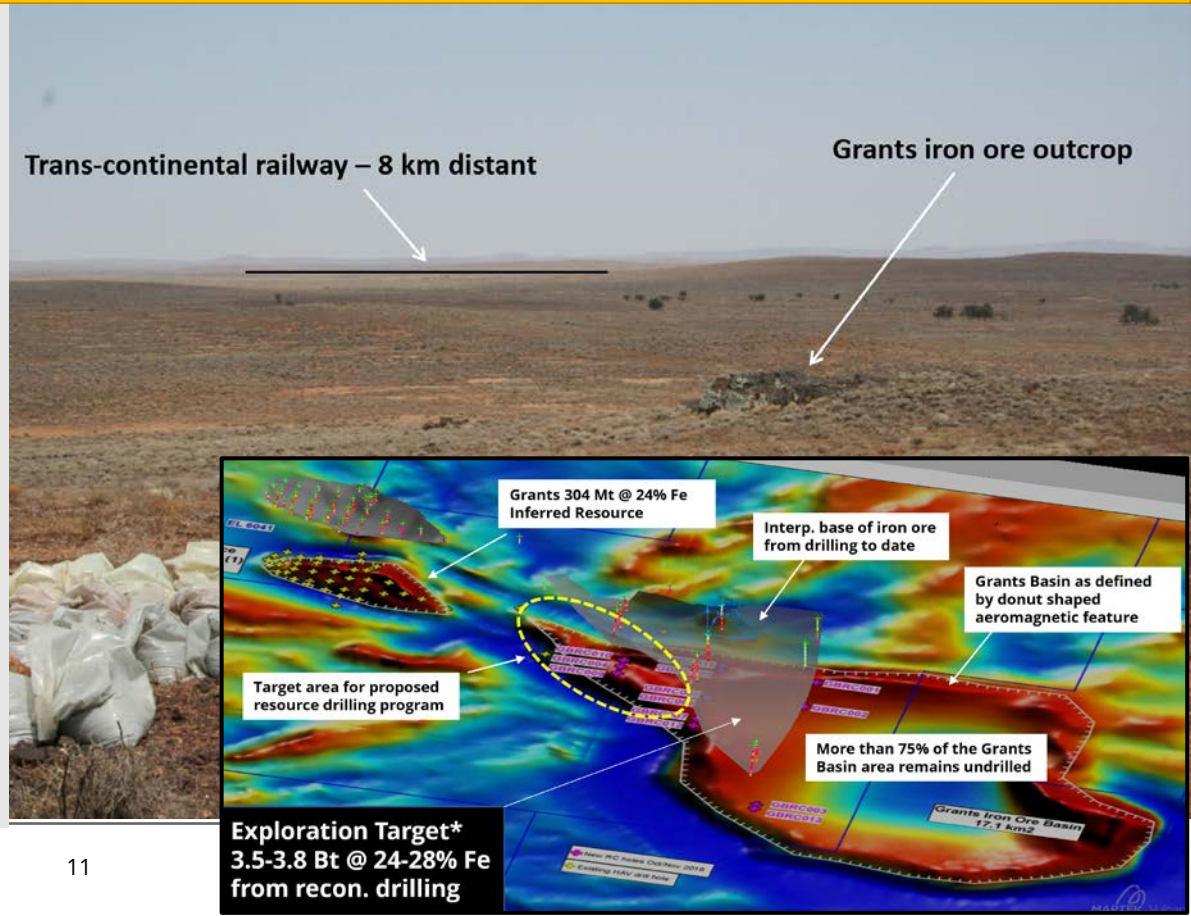
# Grants iron ore: Favourable logistics, yield and recovery

- 304 million tonne Inferred Resource at Grants and 3.5-3.8 billion tonne Exploration Target* at adjoining Grants Basin.
- Deposits outcrop at the surface, have simple geometries, minimal internal waste and low waste:ore indicating favourable mining economics. Comparatively soft ore.
- Lie 8 km south of the main railway line and highway. One hour drive from the regional mining centre of Broken Hill with its skilled workforce.
- Testwork shows that the similar Maldorky iron ore can be upgraded to a high quality 65% iron product for a 40% product yield and 85% iron recovery.
- Power grid 30km away with excess renewable power (wind turbine and solar) available at Broken Hill.

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

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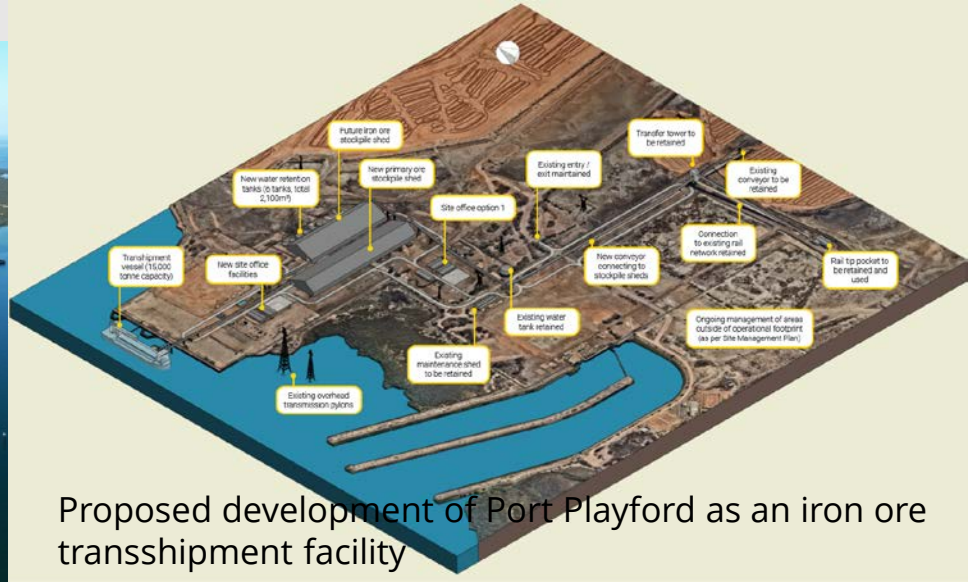
# Iron ore transportation and port logistics solutions

- MOU signed with Port Augusta Operations who is constructing the new Port Playford iron ore transshipment facility.
- "Port Playford will offer a strategically located, low capital and near-term export facility….and will offer storage, port and transshipment services for iron ore" from Port Playford website https://www.portplayford.com
- Direct rail link from within a few km of Grants and Grants Basin iron ore deposits to Port Playford (see slide 5).

Port Playford – site of former Port Augusta power station




Proposed development of Port Playford as an iron ore transshipment facility

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Pictures are reproduced from the Port Playford website

# A promising outlook for Havilah during 2021

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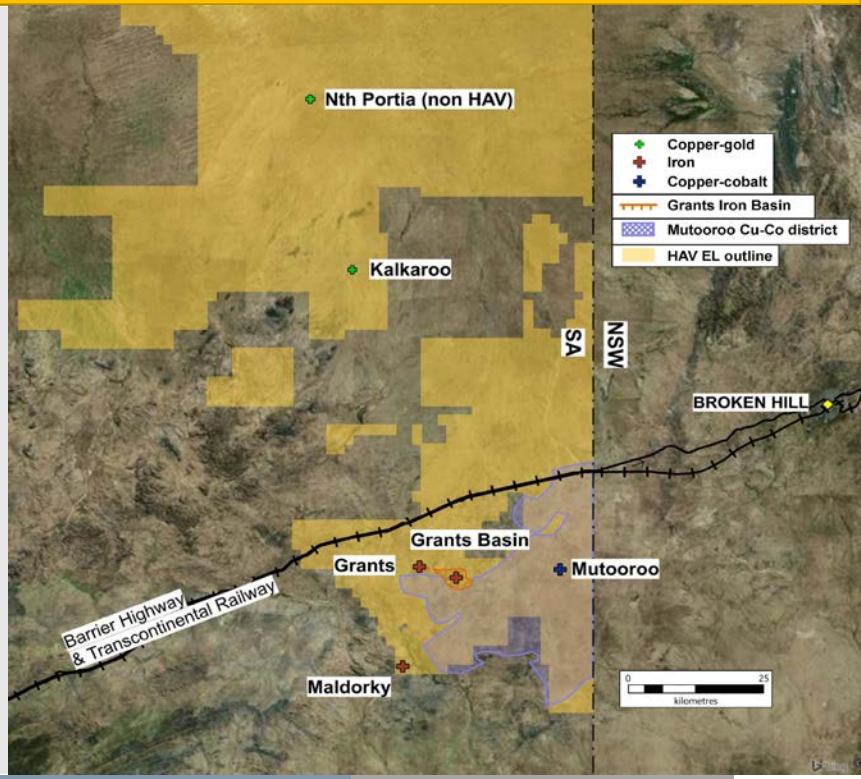
- **Right commodities** – critical minerals, copper, iron ore and gold.
- **Right time** – favourable commodity prices, excellent medium term outlook for copper with the renewable energy revolution upon us.
- **Right location** – Curnamona Craton, northeastern South Australia.
- **Fully funded to carry out 2021 work programs** – following recent oversubscribed placement and SPP.
- **Keen investor interest in Havilah's projects** – evaluating the best options for realising value in Havilah's mineral assets that are currently assigned little or no value by the market – e.g. uranium assets, Mutooroo copper-cobalt project. May include IPO spin-off, sale of equity interests and/or joint venture.
- **Near term gold mine development planned at West Kalkaroo** – subject to completion of feasibility study, permitting and financing, mining development work could commence during 2021.
- **Highest leverage to copper and gold amongst its ASX listed peers** – as Havilah's projects become better recognised by the market share price appreciation is possible (refer to charts in the Additional information).




| JORC Resources: | Copper 1.3 Mt | Gold 3.2 Moz | Cobalt 43.4 Kt | Iron Ore 451 Mt |
|---|---|---|---|---|

# Havilah's high leverage to copper is positive for the future

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## Copper is a critical metal of the future

- Fundamental for key technologies necessary to deliver renewable energy and support a low-carbon transition, which is driving accelerated demand.
- Critical component of EVs, charging stations and renewable energy components.
- Anti-microbial properties, will result in new demand for surface coatings.

## Copper is gaining price momentum

- Chinese economy has recovered.
- China, USA, UK, Australia fiscal and monetary stimulus adding support.
- Supply constraint in focus:
  - limited mine supply
  - declining copper grades at those mines
- Higher price required to incentivise global mine supply.
- USD10,000/tonne copper is a question of 'when' rather than 'if' per US investment bank Jefferies and other respected forecasters.
- BHP says copper output needs to double in 30 years to meet forecast demand.

## 'Ethical' copper is coming

- An increasingly socially conscious Western society is driving moves towards a 'Copper Mark' that will take into account environmental, social and corporate governance ('ESG') credentials in producing and pricing copper.
- Havilah is exceptionally well positioned to meet this challenge given that it is operating exclusively in South Australia, which has high ESG standards.

**COPPER** Commodity

**7,741.00** +36.50 (+0.47%)

Official Close 12/11/2020 MI Indication

**Note copper price is in USD/tonne. Equivalent to USD3.51/lb (using a conversion factor of 2,204.62).**

**Source of copper chart:** Business Insider 11 December 2020
https://markets.businessinsider.com/commodities/copper-price



**Havilah owns 100% of 1.3 million tonnes of JORC copper resources plus exceptional upside discovery potential**

# JORC Ore Reserve & Mineral Resources

JORC Ore Reserves

| Project | Classification | Tonnes (Mt) | Copper % | Gold g/t | Copper tonnes (Kt) | Gold ounces (Koz) |
|---|---|---|---|---|---|---|
| Kalkaroo[1] | Proved | 90.2 | 0.48 | 0.44 | 430 | 1,282 |
| | Probable | 9.9 | 0.45 | 0.39 | 44 | 125 |
| **Total** | | **100.1** | **0.47** | **0.44** | **474** | **1,407** |

**Footnotes to the JORC Ore Reserve and Mineral Resource Tables**

Numbers in tables are rounded

[1] Details released to ASX: 18 June 2018 (Kalkaroo)

[2] Details released to ASX: 18 October 2010 and 5 June 2020 (Mutooroo)

[3] Details released to ASX 30 January 2018 & 7 March 2018 (Kalkaroo)

[4] Note that the Kalkaroo cobalt Inferred resource is not added to the total tonnage

[5] Details released to ASX: 10 June 2011 applying an 18% Fe cut-off (Maldorky)

[6] Details released to ASX: 5 December 2012 applying an 18% Fe cut-off (Grants)

[7] Details released to the ASX: 4 June 2009 using a grade-thickness cut-off of 0.015 metre % eU3O8 (Oban)

## JORC Mineral Resources as at 31 July 2020

| Project | Classification | Resource Category | Tonnes | Copper % | Cobalt % | Gold g/t | Copper tonnes | Cobalt tonnes | Gold ounces |
|---|---|---|---|---|---|---|---|---|---|
| Mutooroo[2] | Measured | Oxide | 598,000 | 0.56 | 0.04 | 0.08 | | | |
| | **Total** | **Oxide** | **598,000** | **0.56** | **0.04** | **0.08** | **3,300** | **200** | **1,500** |
| | Measured | Sulphide Copper-Cobalt-Gold | 4,149,000 | 1.23 | 0.14 | 0.18 | | | |
| | Indicated | Sulphide Copper-Cobalt-Gold | 1,697,000 | 1.52 | 0.14 | 0.35 | | | |
| | Inferred | Sulphide Copper-Cobalt-Gold | 6,683,000 | 1.71 | 0.17 | 0.17 | | | |
| | **Total** | **Sulphide Copper-Cobalt-Gold** | **12,529,000** | **1.53** | **0.16** | **0.20** | **191,700** | **20,000** | **80,600** |
| | | **Total Mutooroo** | **13,127,000** | | | | **195,000** | **20,200** | **82,100** |
| Kalkaroo[3] | Measured | Oxide Gold Cap | 12,000,000 | | | 0.82 | | | |
| | Indicated | Oxide Gold Cap | 6,970,000 | | | 0.62 | | | |
| | Inferred | Oxide Gold Cap | 2,710,000 | | | 0.68 | | | |
| | **Total** | **Oxide Gold Cap** | **21,680,000** | | | **0.74** | | | **514,500** |
| | Measured | Sulphide Copper-Gold | 85,600,000 | 0.57 | | 0.42 | | | |
| | Indicated | Sulphide Copper-Gold | 27,900,000 | 0.49 | | 0.36 | | | |
| | Inferred | Sulphide Copper-Gold | 110,300,000 | 0.43 | | 0.32 | | | |
| | **Total** | **Sulphide Copper-Gold** | **223,800,000** | **0.49** | | **0.36** | **1,096,600** | | **2,590,300** |
| | | **Total Kalkaroo** | **245,480,000** | | | | **1,096,600** | | **3,104,800** |
| | Inferred | Cobalt Sulphide[4] | 193,000,000 | | 0.012 | | | 23,200 | |
| **Total All Projects** | | **All Categories (rounded)** | **258,607,000** | | | | **1,291,600** | **43,400** | **3,186,900** |

| Project | Classification | Tonnes (Mt) | Iron (%) | Fe concentrate (Mt) | Estimated yield |
|---|---|---|---|---|---|
| Maldorky[5] | Indicated | 147 | 30.1 | 59 | 40% |
| Grants[6] | Inferred | 304 | 24 | 100 | 33% |
| **Total all projects** | **All categories** | **451** | | **159** | |

| Project | Classification | Tonnes (Mt) | eU3O8 (ppm) | Contained eU3O8 (Tonnes) |
|---|---|---|---|---|
| Oban[7] | Inferred | 8 | 260 | 2,100 |

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# Additional information

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1. ASX copper peer comparisons
2. ASX gold peer comparisons
3. Kalkaroo project $NPV_{7.5\%}$ value matrix (2 December 2020)

# High leverage to copper based on CuEq JORC Resources

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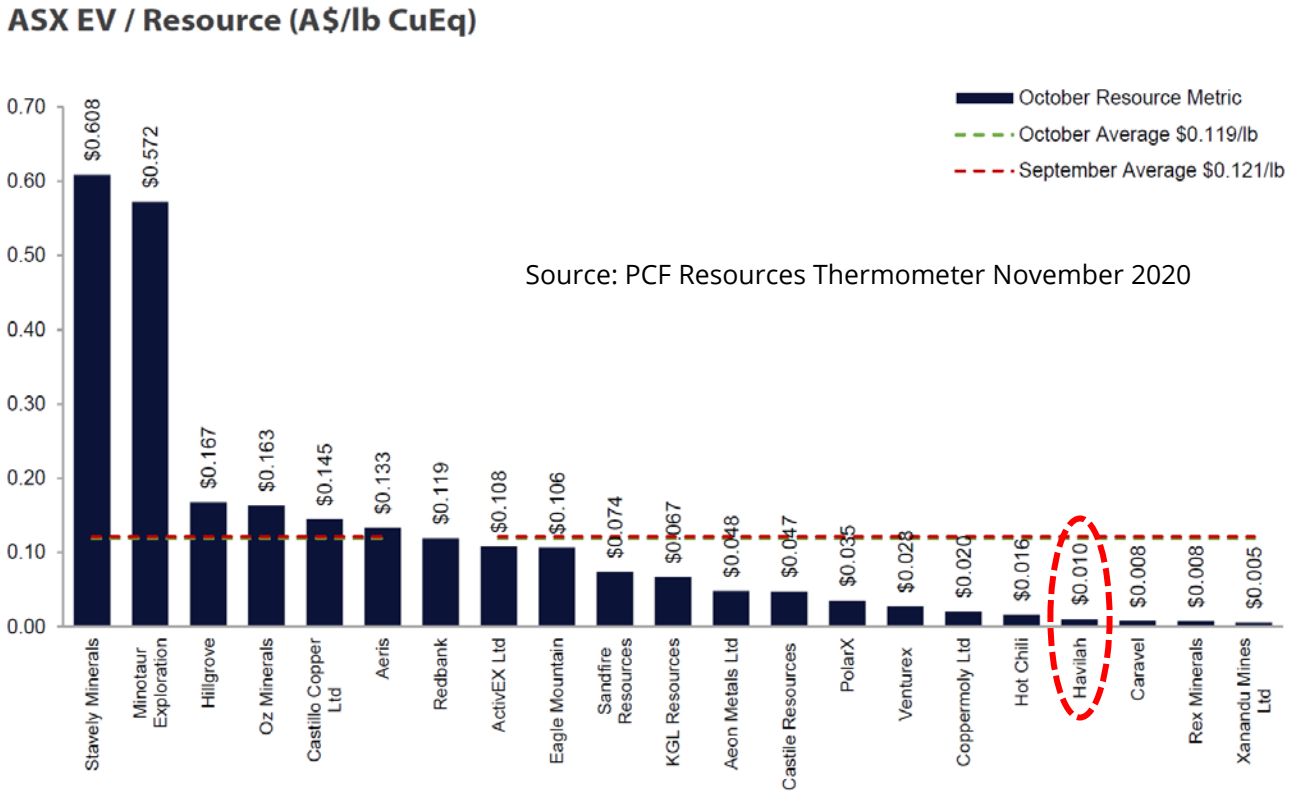
Amongst its ASX peers shown here, Havilah has one of the highest leverages to copper, based on its Enterprise Value / CuEq JORC Resources




Source: PCF Resources Thermometer November 2020

# High leverage to copper based on CuEq Ore Reserves

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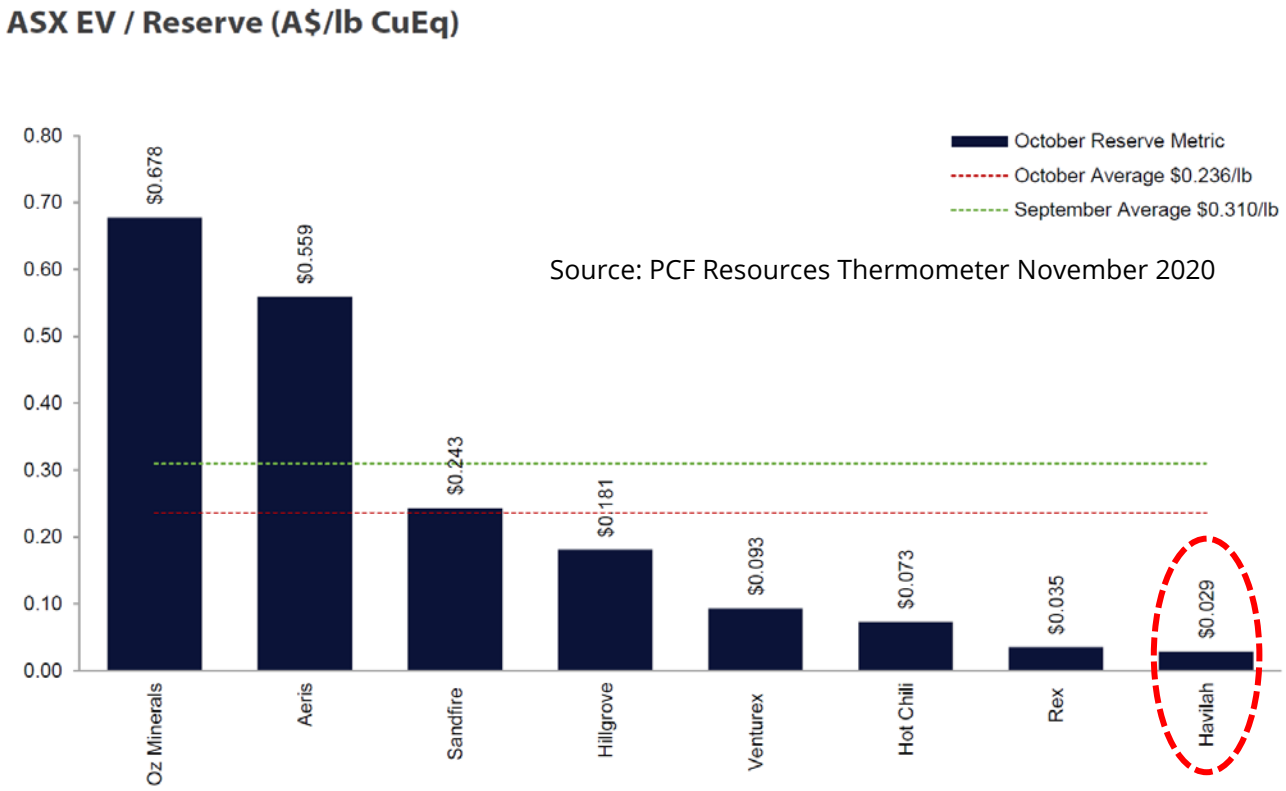
Amongst its ASX peers shown here, Havilah has the highest leverage to copper, based on its Enterprise Value / CuEq Ore Reserves



# High leverage to gold based on gold JORC Resources

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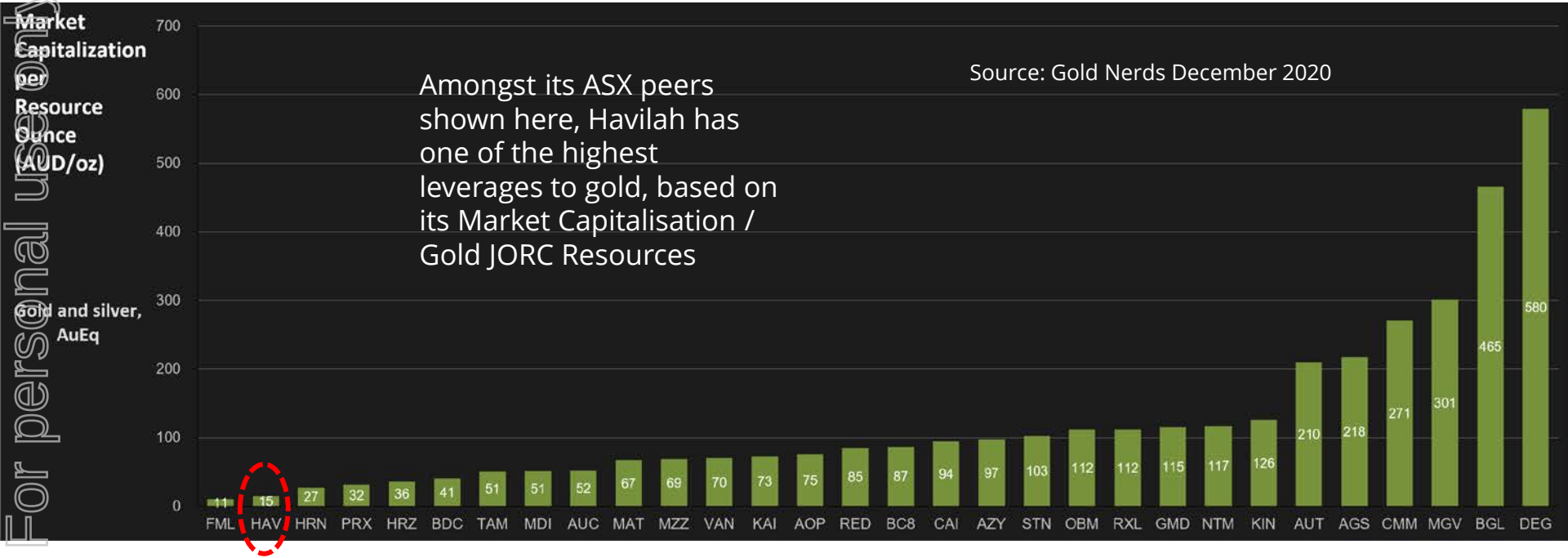


**Comparison criteria are:** 1. Only ASX listed explorers and developers with predominantly gold resources in excess of 500,000 ounces (with one exception AGS). None of the companies are significant gold producers although some are in the construction phase.
2. Mineral resources all located in Australia (with one exception AUT). This is to ensure comparisons are like for like with regard to sovereign risk.

# High leverage to gold based on gold ore reserves

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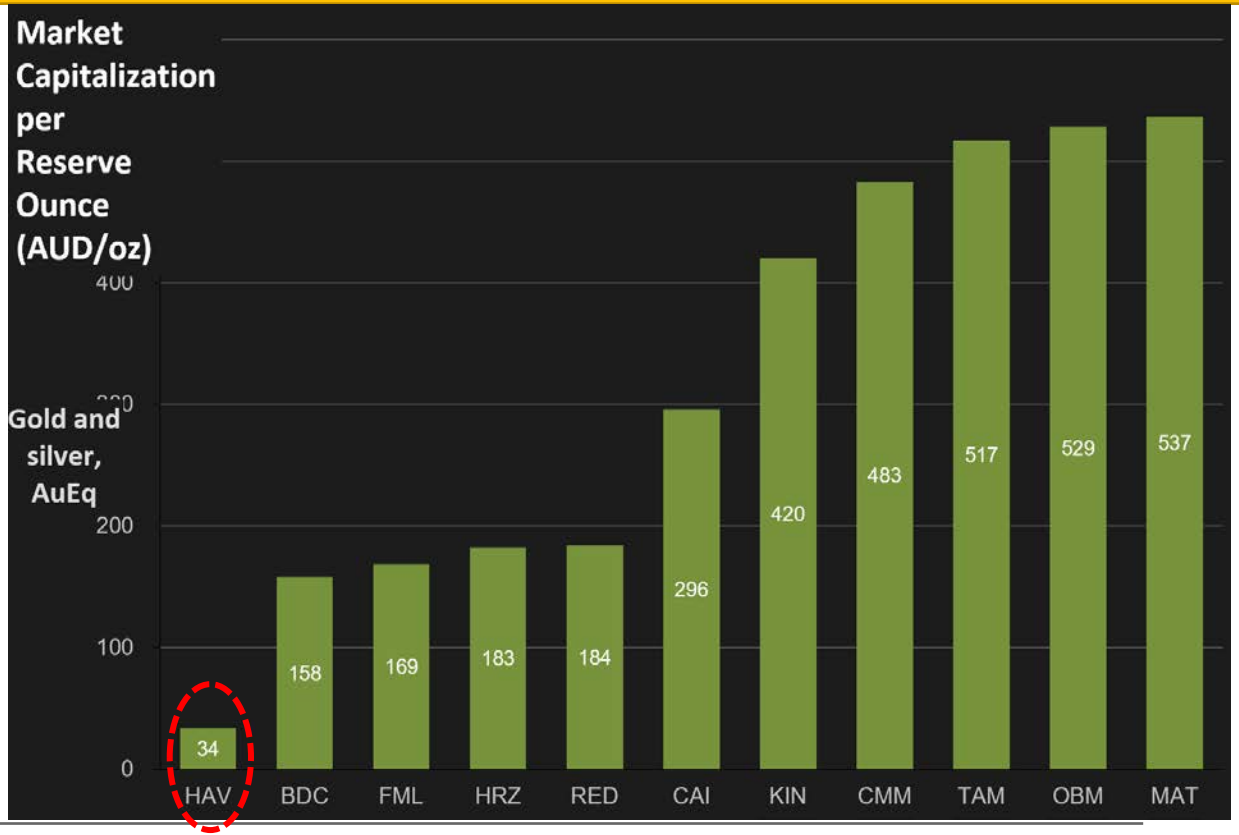
Amongst its ASX peers shown here, Havilah has one of the highest leverages to gold, based on its Market Capitalisation / Gold Ore Reserves

**Comparison criteria are:** 1. Only ASX listed explorers and developers with predominantly gold ore reserves in excess of 100,000 ounces. None of the companies are significant gold producers although some are in the construction phase.
2. Gold ore reserves are all located in Australia. This is to ensure comparisons are like for like with regard to sovereign risk.

Source: Gold Nerds December 2020



# Kalkaroo project $NPV_{7.5\%}$ value matrix

| Copper price USD/lb & AUD/lb | | Gold price USD/oz and AUD/oz (at AUD:USD exchange rate of 0.75) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | USD | | $1,000 | $1,100 | $1,200 | $1,300 | $1,400 | **$1,500** | $1,600 | $1,700 | $1,800 | $1,900 | $2,000 | $2,100 | $2,200 |
| | | **AUD** | **$1,333** | **$1,467** | **$1,600** | **$1,733** | **$1,867** | **$2,000** | **$2,133** | **$2,267** | **$2,400** | **$2,533** | **$2,667** | **$2,800** | **$2,933** |
| | 2.50 | **3.33** | $171 | $239 | $308 | $376 | $445 | $514 | $582 | $651 | $719 | $788 | $857 | $925 | $994 |
| | 2.70 | **3.60** | $301 | $369 | $438 | $506 | $575 | $643 | $712 | $781 | $849 | $918 | $986 | $1055 | $1124 |
| | 2.89 | **3.85** | $427 | $496 | $564* | $633 | $701 | $770 | $839 | $907 | $976 | $1044 | $1113 | $1182 | $1250 |
| | **3.10** | **4.13** | $560 | $629 | $698 | $766 | $835 | $903* | $972 | $1040 | $1109 | $1178 | $1246 | $1315 | $1383 |
| | 3.30 | **4.40** | $690 | $759 | $827 | $896 | $965 | $1033 | $1102 | $1170 | $1239 | $1308 | $1376 | $1445 | $1513 |
| | 3.50 | **4.67** | $820 | $889 | $957 | $1026 | $1094 | $1163 | $1232 | $1300 | $1369* | $1437 | $1506 | $1575 | $1643 |
| | 3.70 | **4.93** | $950 | $1019 | $1087 | $1156 | $1224 | $1293 | $1362 | $1430 | $1499 | $1567 | $1636 | $1705 | $1773 |
| | 3.90 | **5.20** | $1080 | $1149 | $1217 | $1286 | $1354 | $1423 | $1491 | $1560 | $1629 | $1697 | $1766 | $1834 | $1903 |
| | 4.10 | **5.47** | $1210 | $1278 | $1347 | $1416 | $1484 | $1553 | $1621 | $1690 | $1759 | $1827 | $1896 | $1964 | $2033 |

* Pre-tax $NPV_{7.5\%}$ from PFS (green) compared with that at recent long-term forecast (orange) and recent spot copper and gold prices (yellow), as calculated by the PFS financial model. Note that the orange highlighted long term forecast copper and gold prices, pre-tax $NPV_{7.5\%}$ (AUD903 million) in the table is conservative for Kalkaroo as no account has been taken of:

1. Improved gold recoveries in the oxidised ore types from 50% in the PFS to >90% based on recent metallurgical test work (refer to ASX announcement of 9 May 2019).
2. Potential revenue contribution from other by-product commodities such as cobalt, rare earth elements and molybdenum due to incomplete metallurgical test work.
3. Open pit optimisations have not been re-run for higher long-term forecast gold and copper prices. On the basis that lower grades of ore can be profitably treated if metal prices are higher, it is reasonable to assume (based on constant cost inputs) that re-optimisation would result in a larger open pit and hence improved mining economics and a longer mine life. For the present exercise the published PFS open pit optimisation and RPM financial model have been used.
4. The above pre-tax $NPV_{7.5\%}$ value matrix exchange rate was set at an earlier long-term forecast AUD:USD 0.75 rate, whereas over the past 12 months the AUD:USD exchange rate has mostly been below this level.

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**CORPORATE**
Havilah Resources Limited
ABN: 39 077 435 520
ASX Code: HAV

**OFFICE**
PO BOX 3
Fullarton, 5063
South Australia, Australia

Tel: +61 (08) 7111 3627
Email: info@havilah-resources.com.au