

Dreadnought Resources Limited

EV Materials

Australian Equity Research
5 September 2022

Rating
SPECULATIVE BUY

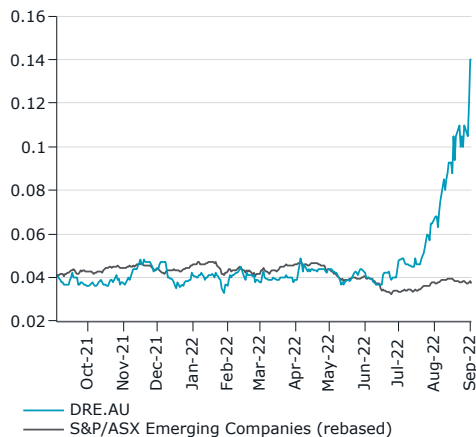
Price Target
A\$0.24

DRE-ASX

Price
A\$0.14

Market Data

52-Week Range (A\$) :	0.03 - 0.14
Avg Daily Vol (000s) :	13
Market Cap (A\$M) :	425.7
Shares Out. (M) :	3,041.0
Enterprise Value (A\$M) :	415
NAV /Shr :	0.24
P/NAV (x) :	0.58



Priced as of close of business 2 September 2022

Dreadnought Resources Limited (DRE-ASX) is an Australian-based exploration company whose primary asset is the emerging Mangaroon Project which contains the 100%-owned Yin Rare Earth Element (REE) prospect, located in the Gascoyne Region of Western Australia. Mangaroon is also prospective for Ni-Cu-PGEs with First Quantum Minerals earning up to a 70% interest in a subset of tenements in the west of the project area. DRE also holds the 100%-owned Tarraji-Yampi Project in the Kimberley as well as the Central Yilgarn Project.

Canaccord Genuity received a fee for its role as Joint Lead Manager to Dreadnought Resource's \$12m equity raise at \$0.06 on 1 August 2022.

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Could Yin be like Yang?

We initiate coverage of DRE with a SPECULATIVE BUY recommendation and a price target of \$0.24.

Dreadnought Resources Limited (DRE-ASX) is an Australian-based exploration company whose primary asset is the emerging Mangaroon Project which contains the 100%-owned Yin Rare Earth Element (REE) prospect, located in the Gascoyne Region of WA. Mangaroon and the Yin ironstone and carbonatite targets are located on tenure adjacent to Hastings Technology Metals (HAS-ASX: \$5.19 | SPECULATIVE BUY, TP \$6.70 | Reg Spencer), which is developing the Yangibana REE Project from similar ironstone horizons with a resource of 27.4Mt @ 0.97% total rare earth oxide (TREO). In our view, the success shown to date by DRE and targets outlined would indicate it has potential to at least replicate the scale defined by HAS.

Immediate REE drill success: In June 2022, DRE commenced drilling the ironstone targets at Yin and releasing thick, high-grade assay results from the first six holes of an initial 120-hole program:

- **35m @ 2.75% TREO** from 94m;
- **34m @ 2.59% TREO** from surface; and
- **31m @ 1.73% TREO** from 24m.

Average NdPr to TREO ratios from DRE's drilling to date have been ~30%, which is similar to HAS' Yangibana <25km away. We also note the global average is ~20%. Infill drilling at Yin was completed in August 2022 with assays pending for 114 of the 120 holes completed. A maiden resource is slated for the DecQ'22 and we think it could be 15-20Mt. RC drilling is now ongoing at the Y3 prospect and will then move to Y2 and the carbonatite targets. Initial metallurgical test work (flotation) from outcropping ironstones has yielded a 92.8% recovery and like HAS, the work confirmed recovery of a monazite concentrate.

How big could Yin be: We have taken publicly available drill data from the 120 drill holes at Yin and modelled mineralisation in Micromine. Our interpretation implies a mine inventory of 15-20Mt from the 3km strike already drilled at Yin alone. Note that Yin has been traced for over 16km and DRE also has compelling targets at Y3 and further afield. Suffice to say that a 40Mt resource would appear to be achievable over time, in our view, and this could increase to beyond 50Mt if the carbonatite targets show promise. For now, we centre our valuation on 40Mt and await further success.

Not just a one trick pony: The Mangaroon Project is also prospective for Ni-Cu-PGEs, with First Quantum Minerals (FM-TSX C\$21.01 | BUY, TP C\$34.00 | Dalton Baretto, Canaccord Genuity Corp (Canada)) earning up to a 70% interest in a subset of tenements centred around the Money Intrusion. DRE also holds the 100%-owned Tarraji-Yampi Project in the Kimberley (12m @ 1.6% Cu, 32g/t Ag & 0.5g/t Au from 45m at Orion in 2021) as well as the Central Yilgarn Project. Until mid-2022, DRE had equal focus on all three projects; however, given the recent discovery of rare earths at Yin and seasonality in the Kimberley, Yin and the broader REE opportunity at Mangaroon has taken precedent.

Valuation and recommendation: The discovery of REEs at Yin is of great strategic importance in the region and is only the beginning, in our view. Upcoming news flow will include several batches of drill results from Yin as well as updates from drilling at Y3 and the carbonatite targets.

Given the early-stage nature of Mangaroon (Yin) and lack of Mineral Resource, we have opted to use a blend of a Resource multiple and takeover scenario to value DRE. We value the early-stage DRE on an unfunded NAV basis. Our NAV comprises our Yin REE Project valuation weighted 50:50 for a Resource Multiple and 50% takeover premium. We initiate coverage of DRE with a SPECULATIVE BUY recommendation and a price target of \$0.24.

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Overview

DRE is an Australian-based exploration company whose primary asset is the emerging Mangaroon Project which contains the 100%-owned Yin Rare Earth Element (REE) prospect, located in the Gascoyne Region of Western Australia. Mangaroon is also prospective for Ni-Cu-PGEs, with First Quantum Minerals earning up to a 70% interest in a subset of tenements in the west of the project area and centred around the Money Intrusion. First Quantum is earning 51% by spending \$12m and a further 19% by sole funding to a Decision to Mine.

DRE also holds the 100%-owned Tarraji-Yampi Project in the Kimberley as well as the Central Yilgarn Project. DRE made its first discovery at Orion (Tarraji-Yampi Project) in mid-2021 (12m @ 1.6% Cu, 32g/t Ag & 0.5g/t Au from 45m) and has commenced work to expand and find complementary deposits for Orion during the ~6-8 month field season generally afforded to early-stage exploration companies in the Kimberley. Until mid-2022, DRE had equal focus on all three projects; however, given the recent discovery of rare earths at Yin and seasonality in the Kimberley, Yin and the broader REE opportunity at Mangaroon has taken precedent for the explorer.

Figure 1: Project Location map



Source: Company reports

Corporate and finance

Capital structure

DRE currently has 3,041m ordinary shares on issue, with a further 86m options (various dates and exercise prices) currently all in the money. The company also proposes to issue 29.2m long term incentive (LTI) performance rights to the Board (7.7m) and employees (21.5m) following shareholder approval at the 2022 AGM. These performance rights centre around delivery of JORC resources and can be issued in three equal tranches as follows:

- Tranche 1: A resource of at least the inferred category of 10Mt @ > 1% TREO by 31 December 2022.
- Tranche 2: A resource of at least the inferred category of 20Mt @ > 1% TREO by 31 December 2023.
- Tranche 3: A resource of at least the inferred category of 30Mt @ > 1% TREO by 31 December 2024.

Substantial shareholders include founder and Non-Executive Chairman Paul Chapman at 10.2%. The Board of Directors collectively hold 14% of the company.

Figure 2: DRE capital structure

			Price	Expiry
Ord Shares	m	3,041.03	\$0.100	
DREAJ	m	2.00	\$0.060	11/08/2024
DREAD	m	3.50	\$0.005	30/06/2024
DREAA_1	m	20.00	\$0.006	25/05/2023
DREAA_2	m	30.00	\$0.005	9/04/2024
DREAF	m	2.75	\$0.010	1/10/2023
DREAK	m	2.00	\$0.060	26/11/2024
DREAH	m	0.75	\$0.020	31/10/2023
DREAI	m	16.50	\$0.040	2/07/2024
DREAL	m	8.50	\$0.065	14/07/2025
<i>Total Options</i>	<i>m</i>	<i>86.00</i>	<i>0.021</i>	
Fully Diluted	m	3,127.03		

Note: Performance Rights to be included following shareholder approval at the 2022 AGM
Source: Company reports

Balance sheet and liquidity

DRE had a reported cash position as at 30 June 2022 of A\$2.5m. Following a recent \$12m placement (completed in August 2022) undertaken at \$0.06, we expect DRE to end the SepQ'22 with A\$10.9m with A\$3.9m being spent on drilling, overheads and fees. We estimate that current liquidity should be sufficient to see DRE through to the definition of a maiden resource at Yin by the end of 2022.

Directors and management (full director bios [here](#))

- Paul Chapman – Non-Executive Chairman
- Dean Tuck – Managing Director
- Ian Gordon – Non-Executive Director
- Paul Payne – Non-Executive Director
- Jessamyn Lyons – Company Secretary
- Matt Crowe – Exploration Manager
- Frank Murphy – Operations Manager
- Nick Chapman, Luke Blais, Sam Busetti – Senior Geologists

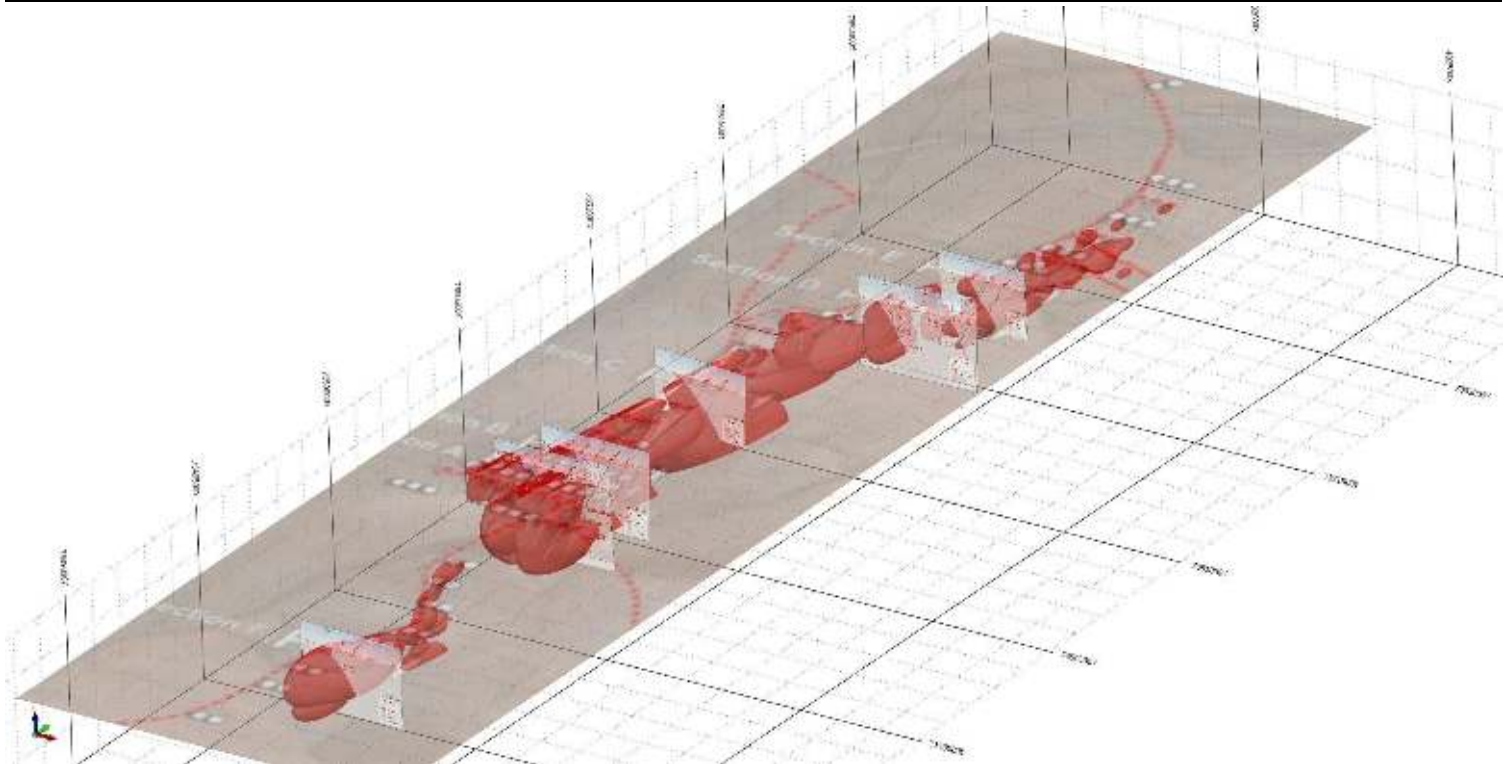
Valuation

Given the early-stage nature of Mangaroon (Yin) and lack of mineral resource, there are too many unknowns to adequately model a production scenario and DCF valuation. Instead, we have opted to use a blend of a Resource multiple valuation and takeover scenario.

CG modelling of the Yin prospect

Prior to ascertaining a Resource Multiple valuation for DRE, we assessed likely resource size. We have taken drill data (collar, survey and mineralised intervals) from the 120 drill holes completed at Yin and modelled the 'deposit' using Micromine's Implicit Modelling module. Using a 0.2% TREO cut off, our interpretation implies a mine inventory of 15-20Mt from the 3km strike already drilled at Yin alone. With limited assay results published to date, we are unable to fully quantify grade. However, given DRE's milestone performance options for management and staff centre around defining resources grading >1% TREO, we are comfortable with 1% TREO being the lower grade limit of a future deposit at Yin. Early indications from the first batch of assays are that the grade may creep towards 1.5% TREO, highlighting potential further upside over time. This data is as of 1 September 2022. Note that only a collar survey has been provided and therefore our model does not account for variations in downhole dip and azimuth. We have taken the reported mineralised intervals and converted them to 2m composites prior to modelling.

Figure 3: Oblique plan view of our modelled mineralisation at Yin, with aerial photo and cross sections overlaid



Source: Company reports, Canaccord Genuity estimates

Resource multiple

Our modelling suggests that 15-20Mt is initially achievable from the drilling completed over the 3km central portion at Yin thus far. Given only 3km of a potential 16km trend has been drill tested at Yin, we view a resource in the region of 40Mt as a realistic goal for Yin over time and use this as the basis for our EV/Resource multiple. This 40Mt does not include the exciting opportunities DRE has further afield at Mangaroon, including Y3 and the carbonatite targets (C1-C5) which will be drill tested imminently. We include value for this along with DRE's other Western Australian projects in our nominal exploration value.

Our Resource multiple-based valuation approach is based on a grade weighted average of implied Resource multiples (EV/Resource) for similar Australian light rare earth element (LREE) projects. We have excluded overseas projects to remove jurisdictional bias/risk. By our calculations a weighted average EV/Resource of ~A\$1.51m/kt of resource implies 40Mt @ 1% TREO for DRE, which would yield an EV of ~A\$600m for DRE.

Figure 4: Australia LREE comps for EV/Resource multiple

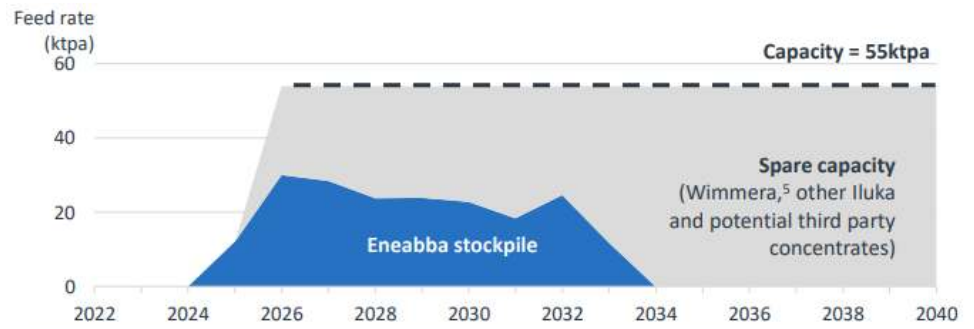
Ticker	Project	Company	M/Cap A\$m	Net Cash A\$m	EV A\$m	Location	Equity	Type	Resource Mt	Grade % TREO	Contained REO (kt)	Type	%NdPr	%Dy+Tb	Stage	Capex US\$m	Product	REO ktpa	EV/Resource kt A\$m	
LYCAU	Mt Weld	Lynas Rare Earths	8,013	966	7,047	Australia	100%	Hardrock	54.5	5.2%	2,834	LREE	24.2%	0.2%	Operating	NA		15.8	2.49	
ARJAU	Nolans	Arafura Resources	552	66	486	Australia	100%	Hardrock	56.0	2.6%	1,456	LREE	26.4%	NA	DFS	\$768	REO	13.3	0.33	
ASMAU	Dubbo	Australian Strategic Metals	490	36	455	Australia	100%	Hardrock	75.2	0.7%	556	LREE	14.0%	NA	DFS	\$1,050	RE Metal	6.3	0.82	
HASAU	Yangibana	Hastings Tech. Metals	554	137	417	Australia	100%	Hardrock	27.5	1.0%	266	LREE	35.0%	0.7%	DFS	\$372	MPEC	8.5	1.56	
REEAU	Cummins Range	RareX Resources	35	8	27	Australia	100%	Hardrock	18.8	1.2%	216	LREE	NA	NA	ResDev	NA	RE CON	NA	0.13	
DREAU	Yin	Dreadnought Resources	426	15	411	Australia	100%	Hardrock				LREE			Pre-resource					
																			Average	1.07
																			Size W. Avg	1.58
																			Grade W. Avg	1.51

Source: Company reports, Canaccord Genuity estimates

Acquisition/takeover

We have also modelled a case where DRE is acquired by a producer in the region or an aspiring regional producer. While little corporate activity has occurred in the local sector, we note Iluka Resources Limited's (ILU-ASX | Not Rated) plans to establish a rare earth refinery at Eneabba, ~600km south of DRE's Mangaroon Project. ILU's Eneabba stockpile comprises the rare earth bearing minerals monazite and xenotime, produced as by-product from Iluka's Narngulu mineral processing plant and stored since the early 1990s. The Eneabba Rare Earth Project was sanctioned in April 2022 after a A\$1.2b non-recourse loan from the Australia government was secured. The operation will include a fully integrated downstream separation and finishing facility located on-site. Processing of the ~1Mt monazite-rich stockpile (TREO grade ~10% and NdPr mix 22%) will produce ~2.5ktpa NdPr over a nine-year LOM according to ILU. Beyond this, the Eneabba refinery can process various third-party feedstock and/or ILU's internal feedstock. While sources such as ILU's Wimmera Rare Earth deposit in Victoria has been flagged as potential feedstock, we are unsure of the economic viability of transporting this material from east coast Australia. Given the large excess capacity at Eneabba, explorers like DRE are of strategic importance to ILU (+\$4bn market cap), in our view.

Figure 5: ILU's Eneabba refinery feed rate and spare capacity



Source: Iluka Resources Limited

Figure 6: Yin REE valuation

Valuation Methodology	A\$m	Weighted %
Resource Multiple: 40Mt @ 1% TREO x 1.51 (EV/Resource multiple)	618.5	50%
Takeover Premium: 50% premium on current Mkt Cap of A\$426m	638.6	50%
Yin Project value	628.6	100%

Source: Canaccord Genuity estimates

Net asset valuation

We value the early-stage DRE on an unfunded NAV basis, meaning future equity dilution has not been considered. Our NAV comprises our Yin REE Project valuation weighted 50:50 for a Resource Multiple and 50% takeover premium, a nominal value ascribed to exploration and other projects (noting that DRE had a market value of ~A\$100m prior to any REE discovery and underpinned by its Kimberley and Yilgarn projects), net of corporate costs, cash and ITM option value.

Figure 7: CG NAV estimate

NET ASSET VALUATION		Shares	
DCF DISCOUNT RATE	12%	3,041.03	
Spot AUD:USD	0.6791	ITM Options	86.00
		Fully diluted	3,041.03

	A\$m	RISK ADJ.	EQUITY	A\$m PER SHARE
Yin REE Project	628.6	100%	100%	628.6 \$0.21
Exploration & Other Projects	100.0			100.0 \$0.03
Corporate	-3.9			-3.9 \$0.00
Investments	0.0			0.0 \$0.00
Cash (at end of current Q)	10.9			10.9 \$0.00
ITM options	1.8			1.8 \$0.00
TOTAL	737.29			737.29 A\$0.24
			Target	A\$0.24
			P/NAV	0.58x

Source: Canaccord Genuity estimates

Product market overview – rare earth elements

Rare earth elements (REEs) or rare earths (REs) is a general term used to describe a group of 17 metals comprising the Lanthanide series of elements. REs are classified into the typically more abundant Light (LRE; includes La, Ce, Nd, Pr), or the more scarce Heavy (HRE; see Figure 8).

Figure 8: Periodic table of the elements showing key REEs

Source: Northern Minerals company presentation

The term 'rare earths' is a misnomer – REs are relatively abundant in the earth's crust, with the term attributable to their rare occurrence in economic concentrations. REs have varied but unique properties (metallurgical, nuclear, electrical and magnetic) that make them critical in many high tech (and military) applications including magnets, phosphors, lasers, superconductors catalysts.

Figure 9: REs and primary applications

	Element	Symbol	Primary use/s	
Light REE's	Lanthanum	La	Catalysts (oil refining), NiMH battery anodes, Metallurgy	
	Cerium	Ce	Catalysts, Polishing, Metallurgy, Glass additives	
	Praesodymium	Pr	Magnets, fibre optics	
	Neodymium	Nd	Magnets, lasers	
	Promethium	Pm	Phosphors	
	Samarium	Sm	Magnets, lasers	
	Europium	Eu	Phosphors	
	Heavy REE's	Gadolinium	Gd	Metallurgy, phosphors, superconductors
		Terbium	Tb	Phosphors
Dysprosium		Dy	Magnets, lasers, nuclear reactor control rods	
Holmium		Ho	Niche scientific uses	
Erbium		Er	Lasers, alloys, pigments	
Thulium		Tm	Lasers, X-rays, superconductors	
Ytterbium		Yb	Lasers, X-rays	
Lutetium		Lu	X ray phosphors and x-ray detectors	
Scandium	Sc	Aviation alloys		
Yttrium	Y	Phosphors, superconductors, Li-I batteries		

Source: CSIRO, Canaccord Genuity

Market demand summary

Magnets make NdPr a focal point of the rare earth market

Permanent magnets are the largest end use market for REEs, comprising ~30% end use market share, followed by catalysts (~26%) and polishers (~13%). Rare earth permanent magnets produce stronger magnetic fields versus alternatives (ferrite, AlNiCo), and are manufactured using alloys of Rare Earths (Nd, Pr, Dy, Tb), iron and cobalt. Permanent magnets made using NdPr (~30% by weight) are the strongest class of permanent magnets and are used in high performance applications such as electric motors, and wind turbine generators.

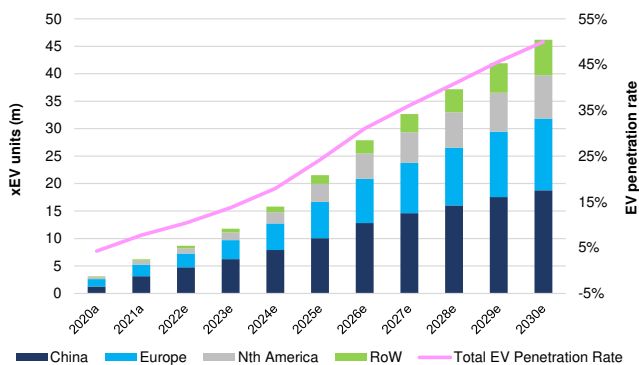
EVs expected to be a key driver of NdPr demand

The use of smaller electric motors in consumer products and the auto industry for non-power train applications (i.e. power steering, windows, seats, sensors, etc.) is well established, with some third-party estimates suggesting ~0.6kg of Rare Earth magnets in every vehicle sold.

However, increasing use of permanent magnet electric motors in EVs (vs induction motors; i.e. Tesla Model 3) could see this market emerge as the key driver of demand given some estimates of 2-2.5kg of Rare Earth Permanent magnets in each EV drivetrain. While short-term demand expectations may suffer a temporary slowing on softer auto market conditions post-COVID, we retain a positive LT outlook for EVs (Figure 10).

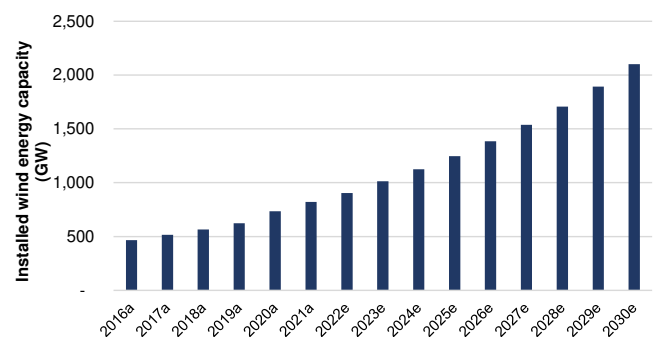
As we highlighted in [Lithium | 2H'22 recharge: "giga-demand" needs major supply growth](#) 2022 EV sales are on track to record ~40% YoY growth with battery factory roll out suggesting we are conservative in our estimates. However, recession concerns, further COVID lockdowns and continued supply chain disruptions present downside risks to any bullish 2022/23 forecasts, in our view.

Figure 10: EV sales forecasts (CGe as at August 2022)



Source: Canaccord Genuity estimates

Figure 11: CGe Installed wind capacity (GW) projections



Source: Canaccord Genuity Estimates

Renewable energy (wind energy) another key demand growth driver

We expect increasing use of permanent magnet direct drive generators, as used in wind turbines, to be another key demand driver for NdPr. Wind-based electricity generation is one of the fastest growing forms of renewable energy, with the International Renewable Energy Agency (IRENA) reporting a +12% increase in global wind energy capacity to ~823GW in 2021, beyond this, we expect global wind capacity of 2.1TW by 2030 (CAGR of 11% 2021-30E).

The increasing popularity of permanent magnet direct drive generators in wind turbines can be attributed to better efficiency and lower maintenance, while an evolution towards larger turbines for lower wind areas could be expected to lead to the use of larger generators (and more NdPr). Third-party estimates suggest direct drive designs to require between 80-650kg of permanent magnet material per turbine.

Our current estimates see Wind turbine generators representing ~10% of global NdPr demand by 2030 as illustrated below in Figure 12.

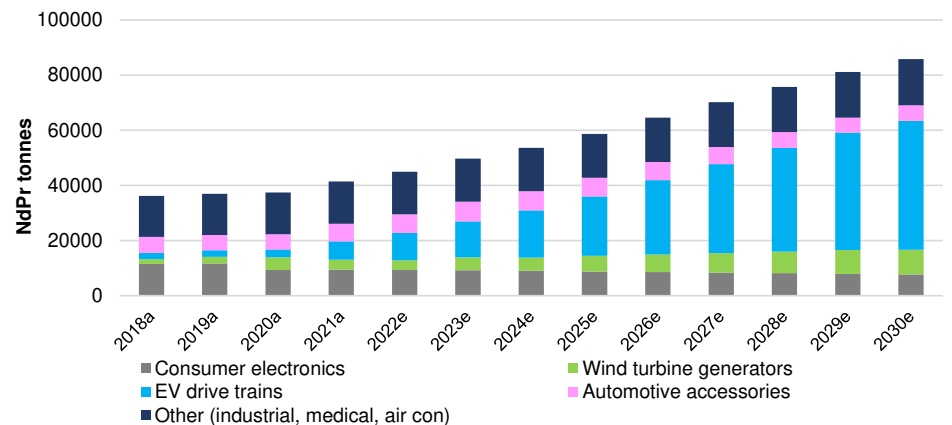
Other key RE applications

- Catalysts (primarily La & Ce) – oil refining and automotive catalysts.
- Polishing media (Ce).
- NiMH rechargeable battery anodes (La + Ce/NdPr).
- Metallurgical applications in iron & steel production (Ce, La).
- Glass & Ceramics (Ce, La and sometimes Y).

NdPr demand outlook

Our preliminary modelling for NdPr demand suggests a CAGR of 8% from 2021 levels to 71kt in 2030. As noted above, we expect this to be primarily driven by the auto/EV and wind turbine markets.

Figure 12: NdPr demand projections



Source: Company reports, Canaccord Genuity estimates

Market supply summary

Key mineral sources of REEs include bastnaesite, monazite and xenotime, which are typically found in four main deposit styles:

- Carbonatites (i.e. Baiyan Obo, Mt Weld, Mountain Pass);
- Alkaline igneous complexes;
- Ion-adsorption clays (i.e. Southern China); and
- Monazite/xenotime bearing heavy mineral sand deposits.

According to the USGS, China hosts the world's largest Reserves of rare earth oxides (REOs) at ~38%. REs are produced and sold in many forms including mineral concentrates (2-60% REO grade, typically exported to China for processing), mixed and separated RE compounds (separated RE products the most used by end-users), and RE metals. RE mineral processing to produce separated products is a highly complex process. Typical process flow sheets involve concentration, calcining, leaching and solvent extraction.

Global RE production

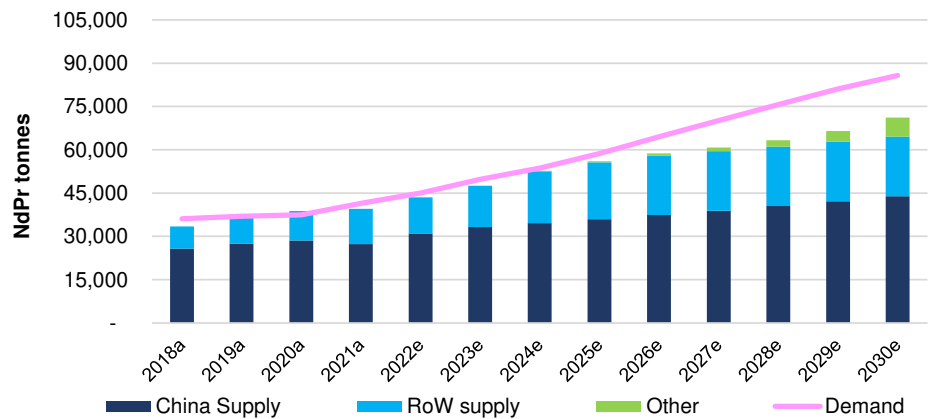
According to USGS Global REO production is estimated at ~280kt. A breakdown of global production shows the lower value La and Ce to comprise a clear majority of global production (representative of higher crustal abundance) at ~60%. Higher value NdPr represents ~25% of global REO output followed by Dy at 1%.

China currently produces approximately ~60% of the world's mined production, followed by Australia (i.e. Lynas Rare Earths (LYC-ASX)) ~8%) and the US (Mountain Pass, MP Materials). Chinese production is centralised within six SOEs, which are subject to Chinese government enforced production quotas (resulting capacity utilisation of 50-60%).

NdPr supply gap from 2025

We forecast NdPr demand to exceed current production rates by 2023, based on an expected post-COVID recovery in the auto/EV markets. An expected inflection in global EV sales in the later part of the decade (and increasing deployment of wind turbines over the coming decade) is forecast to widen this gap substantially by 2030 (Figure 13).

Figure 13: NdPr SxD forecasts (Apr 2022)

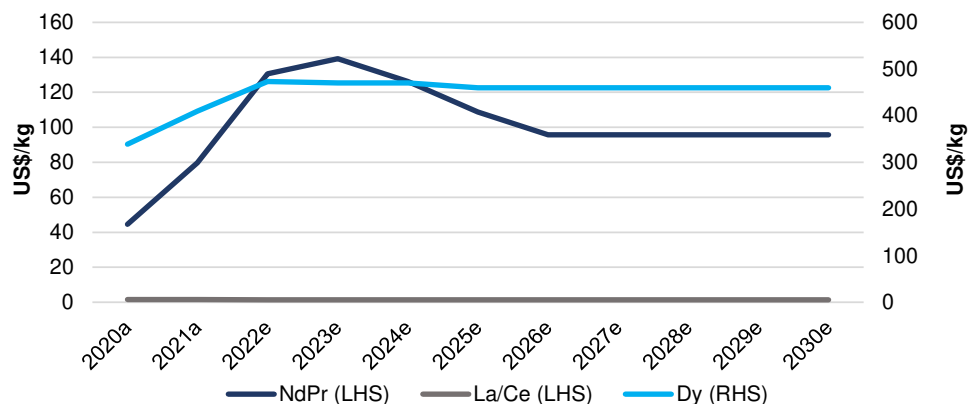


Source: Adamas Intelligence, Company reports, Canaccord Genuity estimates

Pricing forecasts

- NdPr – near-term relatively flat driven on new capacity. Potential for market deficits from 2025 to drive prices to US\$95/kg LT.
- La, Ce – markets likely to remain oversupplied; assumed flat pricing of US\$1.25/kg.
- Dy – increasing demand for use in magnets for EV drive trains; potential for lower supply from China. Dy/Tb to increase by 30-50% LT.

Figure 14: Key RE price forecasts



Source: Company reports, Canaccord Genuity estimates

Asset overview: Mangaroon REE and Ni-Cu-PGM Project

Location, access and infrastructure

The Mangaroon Project covers an area of 4,900km² and is located 270km east-northeast of Carnarvon and 250km southeast of Exmouth in the Gascoyne region of Western Australia. The project site is best accessed by road via the town of Gascoyne Junction and Onslow by air.

Background

DRE acquired an initial 4,000km² of the Mangaroon Zone in November 2020. At the time, the company identified potential for significant magmatic Ni-Cu-PGE mineralisation and high-grade gold. Historic Ni-Cu-PGE mineralisation (1.2% Ni, 0.6% Cu & 4.7 g/t Pd-Pt -Au) had been identified over ~20km of strike at Lumpy's Find within the previously undefined Money Intrusion with outcropping high tenor blebby three phase sulphides returning rock chip values up to 0.5% Cu, 0.2% Ni and 0.9 g/t Pd+Pt.

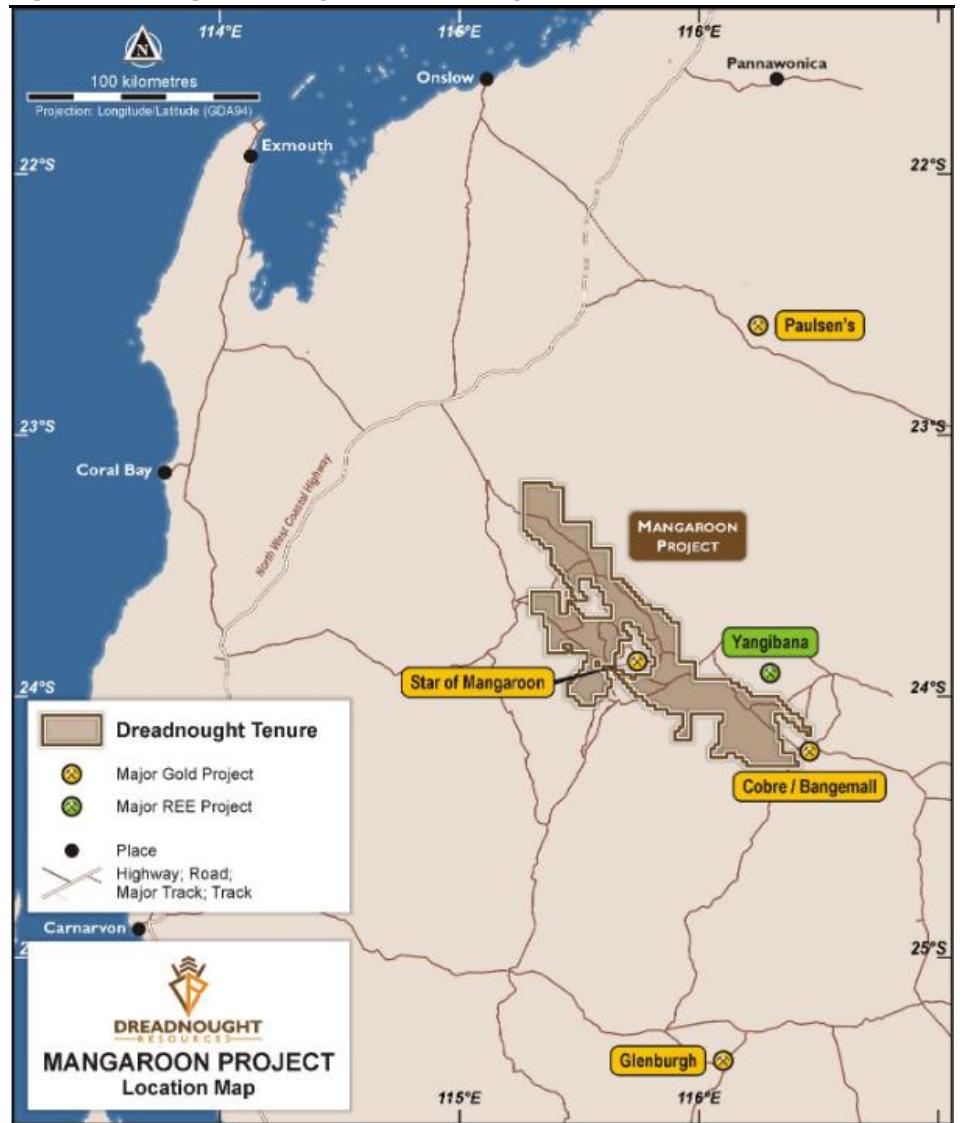
High-grade gold was confirmed at Cullen's Find and Mitchell's Find/White Well with historical 1980s drilling returning 3m @ 6.5 g/t Au from 26m at Cullen's Find and recent rock chips from Mitchell's Find/White Well returning up to 16.4 g/t Au.

In April 2021, DRE and First Quantum entered into an Option Agreement over five tenements at Mangaroon. First Quantum is earning up to a 70% interest in a subset of tenements in the west of the project area and centred around the Money Intrusion. Following initial exploration, First Quantum is now earning 51% by spending \$12m and a further 19% by sole funding to a Decision to Mine.

It wasn't until June 2021 that DRE publicly reported on the REE opportunity at Mangaroon. The company announced that it had mapped and sampled 12 REE prospects located ~15km southwest of HAS' Yangibana REE development. Rock chips from outcropping ironstones at the 2.5km long Yin prospect returned assays up to 11.2% TREO, including 3.6% Nd₂O₃+Pr₆O₁₁. At the time, the TREO and the Nd₂O₃+Pr₆O₁₁ results from Yin were said to exhibit similar characteristics to Yangibana.

Since acquiring the Mangaroon Project in late 2020, DRE has located outcropping high-grade gold bearing quartz veins along the Edmund and Minga Bar Faults; outcropping high tenor Ni-Cu-PGE blebby sulphides in the recently defined Money Intrusion; and outcropping high-grade REE ironstones, similar to those under development at the Yangibana REE Project.

Figure 15: Mangaroon Project location map



Source: Company reports

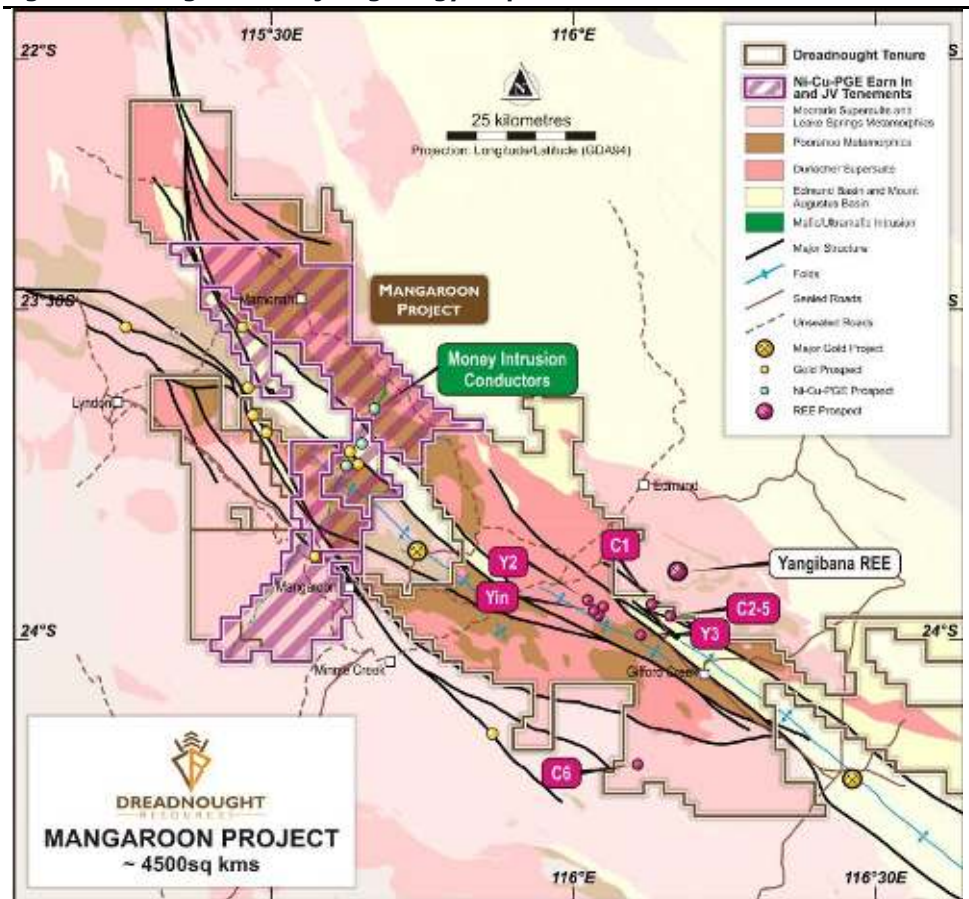
Geology and mineralisation

Given the recent uncovering of REE mineralisation at the Yin prospects within the Mangaroon Project, DRE has not had ample opportunity (Annual Report, Resource Report) to adequately describe the geology in detail in the public domain. We have therefore looked to its neighbour in HAS for a geological overview.

Like at Yin, REE mineralisation at HAS' Yangibana is hosted by iron oxides and hydroxides, termed ironstone, which is the alteration product of the primary host ferrocarnatite and phosphorite intrusive veins (associated with the Gifford Creek carbonatite complex). The ferrocarnatites and ironstones occur as sinuous pods and veins, typically <10m wide, and range from sub-horizontal to steeply dipping. Mineralisation is typically near surface (to a max depth of 80-140m). key REE bearing mineral at Yangibana and Yin is monazite.

As well as ironstones, DRE has identified carbonatite targets at Mangaroon. The classic carbonatite model envisions multiple pulses of carbonatites intrusions associated with radial or ring like REE bearing ironstone dykes and sills and niobium bearing veins all associated with widespread fenite alteration of the host rocks. These intrusions are nearly always associated with major crustal scale structures, at Mangaroon that it interpreted to be the Lyons River Fault, which is a major crustal scale structure. Economic mineralisation is often concentrated within the carbonatite plugs (as primary magmatic, structural/vein hosted or residual enrichment) with additional minor mineralisation associated with the radial and ring ironstone (ferrocarbonatite) dykes. The Yangibana, Yin, Y2 and Y3 ironstones are weathered REE enriched dykes. Niobium rich veins have also been reported from drilling at Yangibana, Y3 and Y2. Since 1991, explorers, geological surveys and academics have searched for the intrusive carbonatite sources that could explain the local proliferation of REE. These carbonatite intrusion sources have the potential to host significantly more mineralisation than the surrounding ironstones. Previously, the carbonatite intrusions were believed to be blind and deep beneath the local REE ironstones as mineralisation was believed to have stopped at the Lyons River Fault – a major mantle tapping crustal scale structure. The identification and confirmation of mineralised carbonatite intrusions has the potential to be a game changer for the region, in our view.

Figure 16: Mangaroon Project geology map



Source: Company reports

Work programs

Following discovery of REE at Mangaroon in June 2021, DRE mapped and sampled high-grade REE ironstones over a 2.5km of strike at the Yin prospect. Samples of up to 7.5% TREO (incl. 2.73% Nd₂O₃+Pr₆O₁₁) were returned.

By September 2021, DRE had uncovered four new ironstones in the growing Yin Rare Earth camp. The company received rock chip results, which has increased the strike of REE mineralisation to 11km from 2.5km. Results included: 5.65% TREO, including 1.61% Nd₂O₃+Pr₆O₁₁ and 1.35% TREO, including 0.56% Nd₂O₃+Pr₆O₁₁.

In November 2021, DRE identified 6 carbonatite intrusions at Mangaroon from a recent magnetic survey flown in the area. Carbonatites are known to host significant rare earth deposits (i.e. Mt Weld – LYC, Nolan’s – ARU). Most of the carbonatites are obscured by calcrete cover and were not focussed on by previous explorers in the region.

In February 2022, DRE received initial rock chip assays from two of six carbonatites. The results confirm REE and phosphate mineralisation (up to 39.7% TREO & 15.2% Nb₂O₅). In addition, high-grade ironstones containing REE, niobium and zircon were also identified and support a geological model where the large-scale mineralised carbonatite intrusions may represent the source of the regional REE and associated mineralisation.

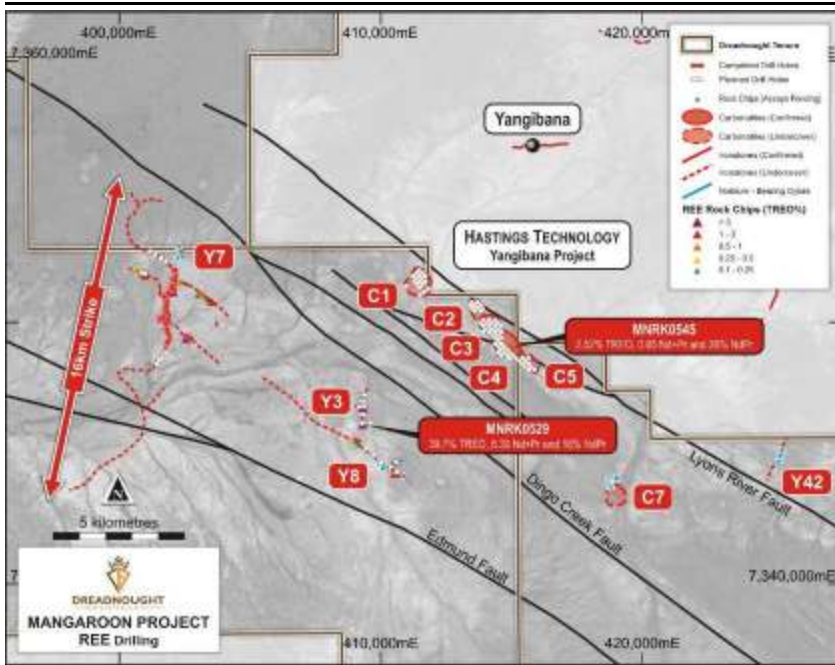
In June 2022, DRE commenced drilling the ironstone targets at Yin and subsequently released encouraging initial results (pXRF): 34m @ 2.9% TREO from 95m (incl. 20m @ 4.2% TREO), 33m @ 2.5% TREO from 1m (incl. 10m @ 6.3% TREO), 17m @ 2.2% TREO from 58m (incl. 9m @ 3.3% TREO).

The assay results for the first pass drilling were returned in July 2022. These assays were slightly better than the pXRF prelims. suggested: **35m @ 2.75% TREO** from 94m; **34m @ 2.59% TREO** from surface; **31m @ 1.73% TREO** from 24m. Average NdPr ratios were ~30% are nearly double the global average and similar to HAS’s Yangibana REE project 25km away, according to DRE.

Infill drilling was completed in August 2022 with assays pending for 114 of 120 holes completed.

Diamond drilling also commenced at Yin in August. The program is running in parallel with the ongoing RC exploration program and will provide QAQC and metallurgical data ahead of a maiden resource in the DecQ’22. RC drilling is now ongoing at the Y3 prospect and will move to the carbonatite targets soon.

Figure 17: REE targets at Mangaroon



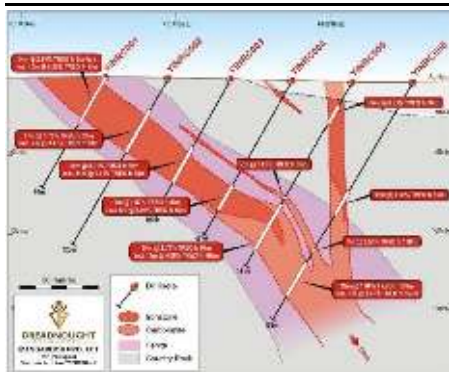
Source: Company reports

Figure 18: Yin drill area



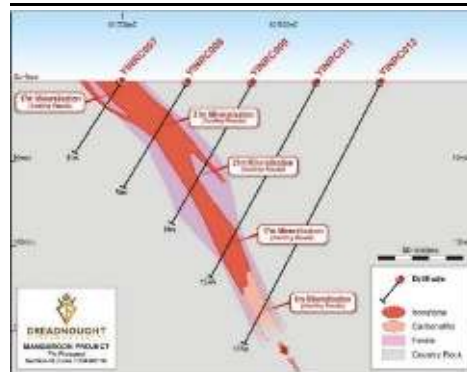
Source: Company reports

Figure 19: Cross Section A



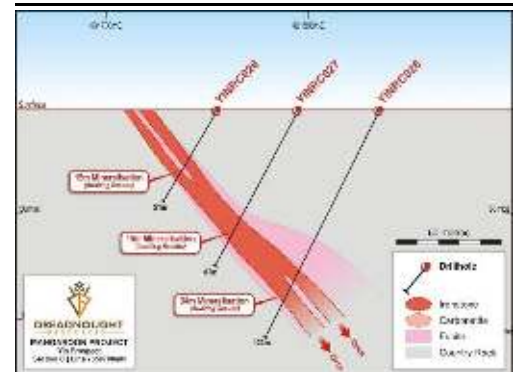
Source: Company reports

Figure 20: Cross Section B



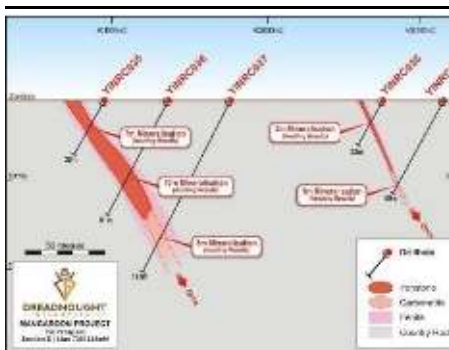
Source: Company reports

Figure 21: Cross Section C



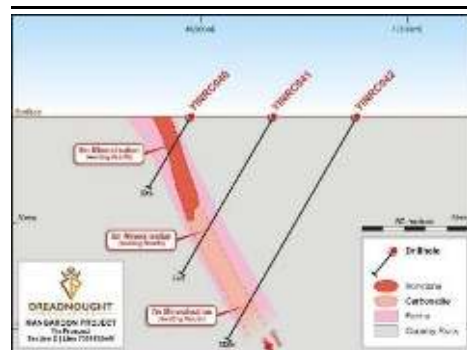
Source: Company reports

Figure 22: Cross Section D



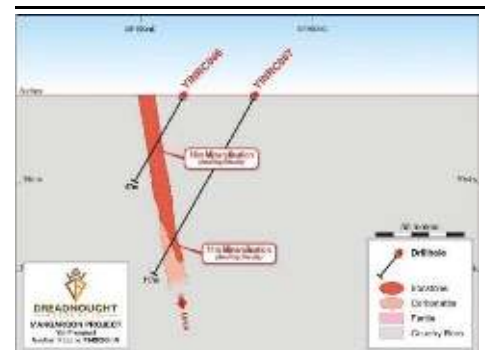
Source: Company reports

Figure 23: Cross Section E



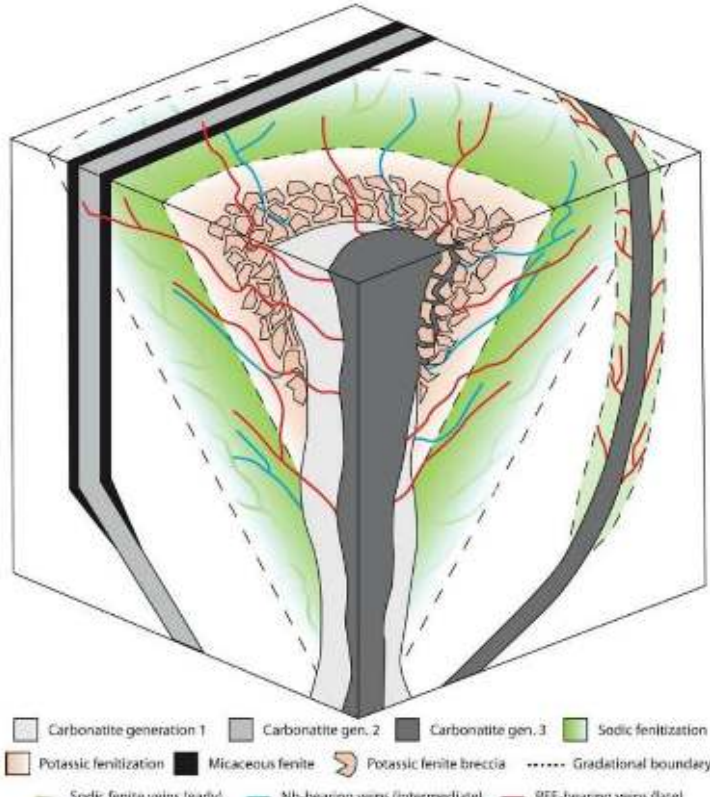
Source: Company reports

Figure 24: Cross Section F



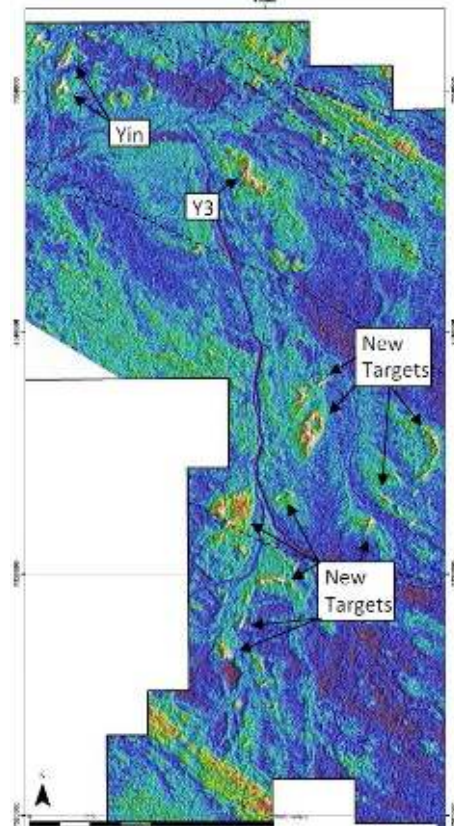
Source: Company reports

Figure 25: Block diagram summarising the spatial relationships and timing between events related to carbonatite intrusions



Source: Elliot, H.A.L., et. al. Ore Geology Reviews v93, pp28-59, 2018)

Figure 26: Thorium radiometric image showing location of Yin, Y3 and new regional targets



Source: Company reports

Resources and Reserves

DRE has not yet defined a Mineral Resource at Yin. It has completed 120 initial drill holes and is awaiting assay for 114. A maiden resource is expected in the DecQ'22.

Metallurgy

In September 2021, DRE received early-stage metallurgical results from the Yin rare earths prospect. Initial met results (flotation) from outcropping ironstones yielded a 92.8% recovery into 3.55% of the original mass. The conc. grade was 12.3% Nd₂O₃ and 40% TREO, a 26x upgrade factor from the 0.47% Nd₂O₃ head grade. Similar to HAS, the work confirmed recovery of a Monazite concentrate. This met work gave DRE confidence that it was dealing with a potentially economic product and justification to drill test the Yin ironstones.

Exploration

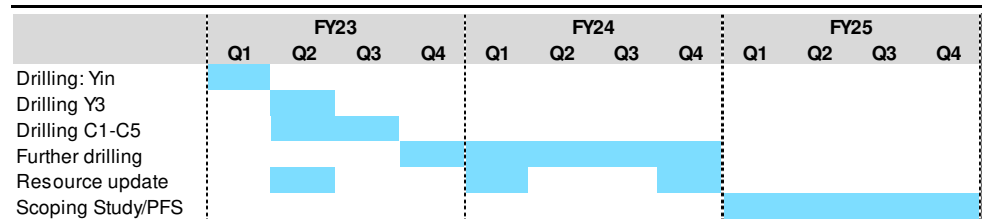
The outcropping Yangibana REE ironstones have a distinctive radiometric anomaly and appear as gossanous iron rich outcrops visible in ortho-imagery. From June to September 2021, DRE announced the identification of the Yin, Y2 and Y3 REE ironstones using wide spaced 1990s government radiometric data and modern ortho-imagery. From September to November 2021, DRE undertook a ~43,000-line kilometre magnetic-radiometric survey resulting in the identification of seven carbonatite targets to date (C1-C7).

DRE has recently completed a project wide targeting exercise of the substantial and detailed magnetic-radiometric survey which has resulted in the identification of 140 anomalies prospective for REE mineralisation. To date, only 40 of these anomalies have been mapped and sampled resulting in the confirmation of outcropping REE mineralisation at 22 targets with an additional 10 targets determined to be prospective but requiring further work and 8 targets considered un-prospective. Most of these targets make up and are located around Yin, Y2, Y3 and C1-C5. There remain 100 targets to be mapped and sampled and are all located within a 40km radius of Yin, Y2, Y3 and C1-C5. Mapping and sampling of the remaining 100 targets is ongoing with further results expected from September through October 2022.

Project timeline

DRE has outlined plans to drill and deliver a maiden resource over Yin by the DecQ'22. We'd expect drilling to continue for the remainder of FY23 and into FY24 with resource updates delivered along the way as required. DRE could be in a position to commence study work in FY25.

Figure 27: Estimated project timetable for DRE



Source: Canaccord estimates

Mangaroon Ni-Cu-PGE: First Quantum Option

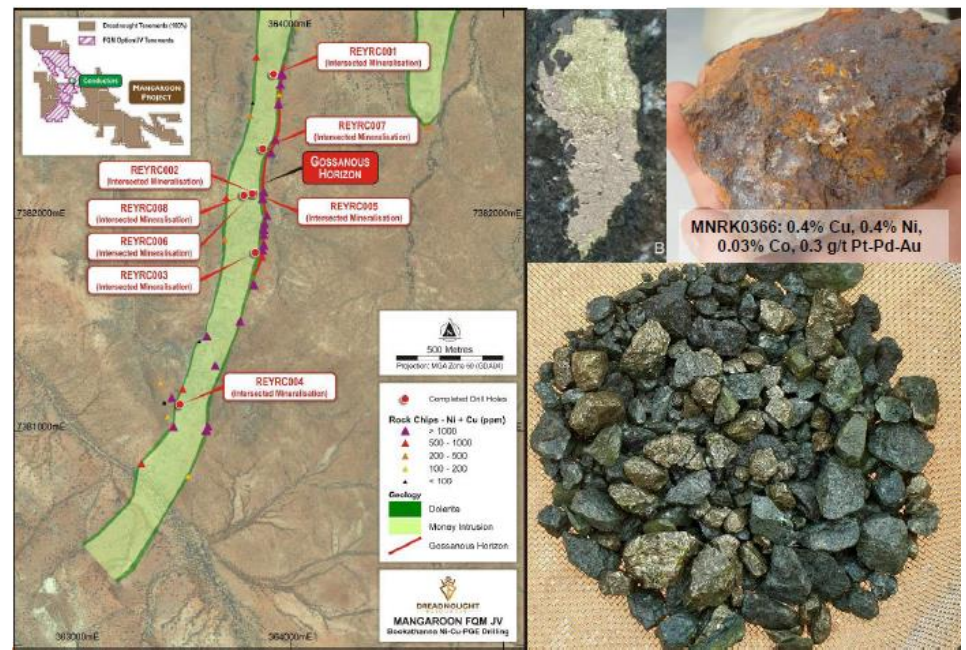
DRE acquired an initial 4,000km² of the Mangaroon Zone in November 2020. At the time, the company identified potential for significant magmatic Ni-Cu-PGE mineralisation and high-grade gold. Historic Ni-Cu-PGE mineralisation (1.2% Ni, 0.6% Cu & 4.7 g/t Pd-Pt -Au) had been identified over ~20km of strike at Lumpy's Find within the previously undefined Money Intrusion with outcropping high tenor blebby three phase sulphides returning rock chip values up to 0.5% Cu, 0.2% Ni and 0.9 g/t Pd+Pt.

High-grade gold was confirmed at Cullen's Find and Mitchell's Find/White Well with historical 1980s drilling returning 3m @ 6.5 g/t Au from 26m at Cullen's Find and recent rock chips from Mitchell's Find/White Well returning up to 16.4 g/t Au.

In April 2021, DRE and First Quantum entered into an Option Agreement over five tenements at Mangaroon. First Quantum is earning up to a 70% interest in a subset of tenements in the west of the project area and centred around the Money Intrusion. Following initial exploration, First Quantum is now earning 51% by spending \$12m and a further 19% by sole funding to a Decision to Mine.

The Money Intrusion is a ~45km long, outcropping mafic/ultramafic intrusion with high tenor blebby Cu-Ni-PGE bearing sulphides. In 2021, a 1km long outcropping gossanous Ni-Cu-PGE was mapped and sampled. Drilling ensued in 2022. Disseminated to net-textured/brecciated magmatic Ni-Cu sulphide (pyrrhotite-chalcopyrite-pentlandite) mineralisation has been intersected in nine out of 12 RC holes. The drilling covers only ~10% of strike along the Money Intrusion. Assays are expected in September 2022. The Money Intrusion has been confirmed as having a bladed/funnel shape with mineralisation along both sides of the intrusion, highlighting the potential for massive sulphide mineralisation at depth. Fixed loop electromagnetics (FLEM) surveys will commence in October 2022 with drill further targets expected in December 2022.

Figure 28: Location and samples from the Money Intrusion



Source: Company reports

Asset overview: Tarraji-Yampi Cu-Ag-Co-Ni-PGE Project

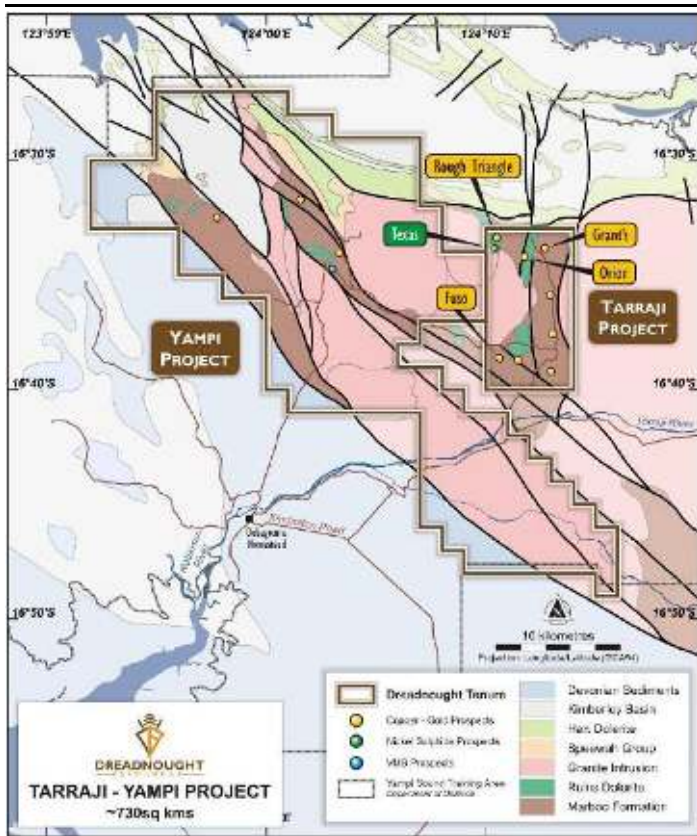
Overview

The Tarraji-Yampi Project is located ~80km from the port of Derby and entirely within the Yampi Sound Defence Training Area, which was off limits to exploration since 1978. With DRE gaining access, it has first mover status in this prospective region of the Kimberley where its neighbours include IGO (IGO-ASX) and Chalice Mining (CHN-ASX).

DRE made its first discovery at Orion in mid-2021 when it returned **12m @ 1.6% Cu, 32g/t Ag & 0.5g/t Au** from 45m. This was a massive sulphide discovery under thin cover. Follow up drilling returned **16m @ 2.2% Cu, 39g/t Ag, 6.6g/t Au & 0.4% Co** from 77m (incl. 7m @ 4.7% Cu). Assays show massive sulphide (primary) as well as supergene (chalcocite) and oxide mineralisation. Orion has been confirmed over 240m strike to 150m depth and remains open.

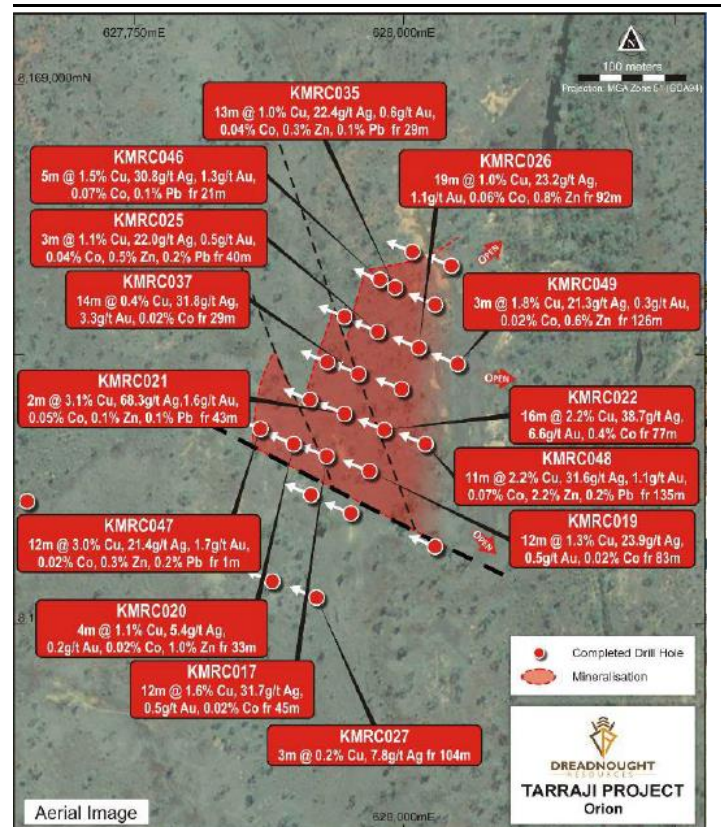
DRE has commenced work to expand and find complementary deposits for Orion during the ~6-8 month field season generally afforded to early-stage exploration companies in the Kimberley. Auger work is underway this current field season.

Figure 29: Tarraji-Yampi location map



Source: Company reports

Figure 30: Drilling over Orion



Source: Company reports

Asset overview: Central Yilgarn Gold-Base Metals-LCT-Iron Ore Project

Overview

The Central Yilgarn Project is located across four greenstone belts northwest of Kalgoorlie and due west of Menzies, in the WA Goldfields. The projects cover ~1,600sqkm and are prospective for a number of commodities including gold, base metals, LCT and iron ore. The landholding in the region is dominated by Hancock Prospecting and Mineral Resources who are seeking iron ore in Archean BIFs.

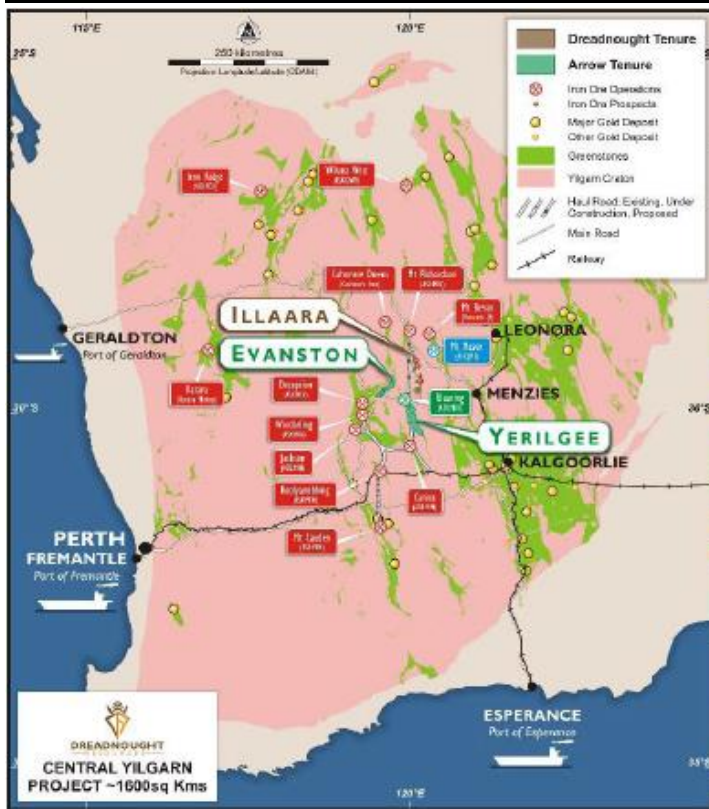
DRE's strategy is to assess opportunities for commercialisation of its assets and generate targets for testing.

The company has a large number of assays pending with DRE currently undertaking a project wide commercial & technical review.

In FY21, a number of work programs were completed at Illaara including:

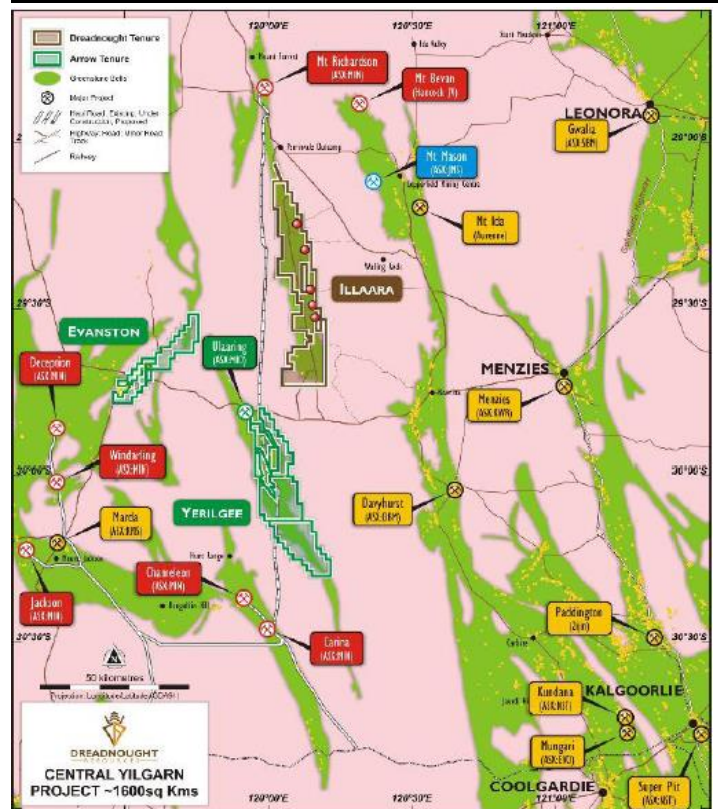
- RC Drilling at Metzke's Corridor – 24 holes for 3,513m of drilling at Metzke's Find, Longmore's Find, Black Oak, Bald Hill and Little Dove.
- RC Drilling at Lawrence's Corridor – 45 holes for 3,864m of drilling at 14 lithostructural-geochemical targets.

Figure 31: Yilgarn regional map



Source: Company reports

Figure 32: Project location map and road transport routes



Source: Company reports

Investment risks

Financing risks

As a pre-production company with no material income, DRE is reliant on equity and debt markets to fund development of its assets and progress its regional exploration pipeline. Total development and working capital requirements are subject to establishment of resources and completion of mining studies. There are no guarantees that studies will result in a positive investment decision. Further, we can make no assurances that accessing these markets will be done without further dilution to shareholders.

Exploration risks

Exploration is subject to a number of risks and can require a high rate of capital expenditure. Risks can also be associated with conversion of inferred resources and lack of accuracy in the interpretation of geochemical, geophysical, drilling and other data. No assurances can be given that exploration will delineate further mineral resources nor that the company will be able to convert the current mineral resource into minable reserves.

Operating risks

If and when in production, the company will be subject to risks such as plant/equipment breakdowns, metallurgical (meeting design recoveries within a complex flowsheet), materials handling and other technical issues. An increase in operating costs could reduce the profitability and free cash generation from the operating assets considerably and negatively impact valuation. Further, the actual characteristics of an ore deposit may differ significantly from initial interpretations which can also materially impact forecast production from original expectations.

Commodity price and currency fluctuations

As with any mining company, DRE is directly exposed to commodity price and currency fluctuations. Commodity price fluctuations are driven by many macroeconomic forces including inflationary pressures, interest rates and supply and demand factors. These factors could reduce the profitability, costing and prospective outlook for the business.

Directors and key management

Paul Chapman – Non-Executive Chairman

Paul is a chartered accountant with over 30 years' experience in the resources sector gained in Australia and the United States. Paul was a founding shareholder and/or director of the following ASX-listed companies: Black Cat Syndicate, Reliance Mining, Encounter Resources, Rex Minerals, Silver Lake Resources, GCX Metals and Avanco Resources. Paul is also Non-Executive Chairman of Meeka Minerals (MEK), a non-executive director of gold developer Black Cat Syndicate (BC8), copper/gold explorer Encounter Resources (ENR) and gold/base metals explorer Sunshine Gold (SHN).

Dean Tuck – Managing Director

Dean is an experienced geologist and exploration manager, having worked across a wide range of commodities in Australia, Brazil and Southeast Asia from project generation through to resource evaluation. Dean has held senior level positions ranging from private companies to BHP Billiton and ASX listed junior explorers. Dean has been instrumental in several discoveries covering Cu-Ag-Au-Co massive sulphide, REE ironstones, REE-Nb-Phosphate carbonatites, orogenic gold, LCT pegmatites and iron ore.

Ian Gordon – Non-Executive Director

Ian is a mining executive with extensive experience in transaction generation, project acquisition, mine development and the management of public companies. Ian is a non-executive director of ASX-listed Woomera Mining (WML) and was formerly Managing Director of Ramelius Resources Limited (RMS).

Paul Payne – Non-Executive Director

Paul is an experienced geologist with a strong technical background across a range of commodities and high-level corporate experience both in Australia and Internationally. Paul has held corporate roles including founding Managing Director of Dacian Gold Limited (DCN) where he was instrumental in the major initial gold discovery at its Mount Morgans project. Paul is currently a non-executive director of Carnaby Resources Limited (CNB) and Essential Metals Limited (ESS) and serves as an independent consultant to DeGrey Mining Ltd (DEG) and Musgrave Minerals (MGV) through his consultancy PayneGeo.

Peer comps

Figure 33: Selected REE projects

	Project	Company	Ticker	M/Cap US\$m	Location	Type	Resource			Grade Contained		Type	% NdPr	%Dy+Tb	Stage	Capex US\$m	REO ktpa
							Mt	% TREO	REO (kt)	% TREO	REO (kt)						
Operating	Mt Weld	Lynas Rare Earths	LYC	ASX	6,104	Australia	Hardrock	54.5	5.2%	2,834	LREE	24.2%	0.2%	Operating	NA	15.8	
	Mountain Pass	MP Materials	MP	NYSE	7,374	USA	Hardrock	19.2	7.1%	1,354	LREE	16.3%	0.1%	Operating	NA	38.5	
HREE Projects	Penco Module	Aclara Resources	ARA	TSX-V	159	Chile	Ionic Clay	22.8	0.24%	55	HREE	15.4%	6.2%	PEA	129	0.7	
	Makuutu	Ionic Rare Earths	IXR	ASX	135	Uganda	Ionic Clay	532.0	0.06%	340	HREE	28.7%	4.3%	Scoping	301	2.7	
	Koppamurra	Australia Rare Earths	AR3	ASX	61	Australia	Ionic Clay	39.9	0.07%	29	HREE	21.6%	3.0%	ResDev	NA	NA	
	Brow ns Range	Northern Minerals	NTU	ASX	175	Australia	Hardrock	9.3	0.67%	62	HREE	2.3%	9.8%	PFS	247	2.9	
	Norra Karr	Leading Edge Materials	LEM	TSX-V	65	Sweden	Hardrock	31.1	0.61%	190	HREE	13.5%	5.7%	PFS	487	5.3	
	Round Top	Texas Mineral Res.	TMRC	OTCQB	138	USA	Hardrock	1050.0	0.05%	525	HREE	7.1%	6.3%	PEA	350	2.3	
LREE Projects	Nolans	Arafura Resources	ARU	ASX	218	Australia	Hardrock	56.0	2.6%	1,456	LREE	26.4%	NA	DFS	768	13.3	
	Dubbo	Australian Strategic Metals	ASM	ASX	730	Australia	Hardrock	75.2	0.7%	556	LREE	14.0%	NA	DFS	1,050	6.3	
	Ngualla	Peak Resources	PEK	ASX	94	Tanzania	Hardrock	214.4	2.2%	4,610	LREE	21.4%	0.1%	DFS	365	10.8	
	Yangibana	Hastings Tech. Metals	HAS	ASX	324	Australia	Hardrock	27.5	1.0%	266	LREE	35.0%	0.7%	DFS	372	8.5	
	Kvanefjeld	Greenland Minerals	GGG	ASX	58	Greenland	Hardrock	1010.0	1.1%	11,140	LREE	18.6%	0.8%	DFS	505	32.0	
	Songwe Hill	Mkango Resources	MKA	TSX-V	76	Malawi	Hardrock	48.0	1.4%	672	LREE	20.3%	NA	PFS	311	2.8	
	Bear Lodge	Rare Element Res.	REEMF	OTCQB	243	USA	Hardrock	45.0	2.7%	1,215	LREE	22.8%	0.6%	PFS	290	6.8	
	Nechalacho	Vital Metals	VML	ASX	141	Canada	Hardrock	94.7	1.4%	1,345	LREE	25.2%	0.7%	ResDev	NA	NA	
	Cummins Range	RareX Resources	REE	ASX	36	Australia	Hardrock	18.8	1.2%	216	LREE	NA	NA	ResDev	NA	NA	
	Longonjo	Pensana	PRE	LON	197	Angola	Hardrock	333.0	1.4%	4,762	LREE	21.6%	0.7%	PFS	131	20.0	
	Sarfartoq	Hudson Resources	HUD	CVE	9	Greenland	Hardrock	14.1	1.5%	212	LREE	25.0%	NA	PEA	343	6.0	

Note: Capex estimates as per most recent reported study results; market capitalisations based on prices as at 1 September 2022
Source: Company reports, FactSet

Appendix: Important Disclosures

Analyst Certification

Each authoring analyst of Canaccord Genuity whose name appears on the front page of this research hereby certifies that (i) the recommendations and opinions expressed in this research accurately reflect the authoring analyst's personal, independent and objective views about any and all of the designated investments or relevant issuers discussed herein that are within such authoring analyst's coverage universe and (ii) no part of the authoring analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by the authoring analyst in the research, and (iii) to the best of the authoring analyst's knowledge, she/he is not in receipt of material non-public information about the issuer.

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Sector Coverage

Individuals identified as "Sector Coverage" cover a subject company's industry in the identified jurisdiction, but are not authoring analysts of the report.

Investment Recommendation

Date and time of first dissemination: September 04, 2022, 16:30 ET

Date and time of production: September 02, 2022, 02:20 ET

Target Price / Valuation Methodology:

Hastings Technology Metals Ltd - HAS

We value HAS on a fully financed NAV basis, comprising our estimated project NPV (9% WACC), a nominal value ascribed to mine life extension potential/exploration properties, and diluted for our project financing assumptions including project debt and new equity.

First Quantum Minerals Ltd. - FM

Our target is based on an equal weighting of 5.0x ntm EBITDA and 1.0x NAV, measured as at July 1, 2023.

Dreadnought Resources Limited - DRE

Our valuation is preliminary in nature and should be viewed as a what-if case given we are at a pre-resource, early stage at Yin. We have opted to use a blend of a Resource multiple and takeover scenario to derive a price target for DRE. Our net asset valuation per share is based on an unfunded scenario.

Risks to achieving Target Price / Valuation:

Dreadnought Resources Limited - DRE

Financing risks

As a pre-production company with no material income, DRE is reliant on equity and debt markets to fund development of its assets and progress its regional exploration pipeline. Total development and working capital requirements are subject to establishment of resources and completion of mining studies. There are no guarantees that studies will result in a positive investment decision. Further, we can make no assurances that accessing these markets will be done without further dilution to shareholders.

Exploration risks

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Commodity price and currency fluctuations

As with any mining company, DRE is directly exposed to commodity price and currency fluctuations. Commodity price fluctuations are driven by many macroeconomic forces including inflationary pressures, interest rates and supply and demand factors. These factors could reduce the profitability, costing and prospective outlook for the business.

First Quantum Minerals Ltd. - FM

There are risks associated with First Quantum's share price achieving our target prices and our financial forecasts. Metal prices may not match our forecasts and exchange rate fluctuations may impact company earnings. Further, there are operating risks involved in all mining operations. Technical, environmental, regulatory, and political risks can all impact financial estimates and valuation.

Hastings Technology Metals Ltd - HAS

Financing risks

As a pre-production company with no material income, HAS is reliant on equity and debt markets to fund development of its assets and progressing its regional exploration pipeline. Total development and working capital requirements are subject to completion of final studies. There are no guarantees that studies will result in a positive investment decision for the Yangibana project. Further, we can make no assurances that accessing these markets will be done without further dilution to shareholders.

Exploration risks

Exploration is subject to a number of risks and can require a high rate of capital expenditure. Risks can also be associated with conversion of inferred resources and lack of accuracy in the interpretation of geochemical, geophysical, drilling and other data. No assurances can be given that exploration will delineate further mineral resources nor that the company will be able to convert the current mineral resource into minable reserves.

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Distribution of Ratings:

Global Stock Ratings (as of 09/04/22)

Rating	Coverage Universe		IB Clients
	#	%	%
Buy	635	66.56%	34.17%
Hold	143	14.99%	16.78%
Sell	11	1.15%	18.18%
Speculative Buy	158	16.56%	39.24%
	954*	100.0%	

*Total includes stocks that are Under Review

Canaccord Genuity Ratings System

BUY: The stock is expected to generate risk-adjusted returns of over 10% during the next 12 months.

HOLD: The stock is expected to generate risk-adjusted returns of 0-10% during the next 12 months.

SELL: The stock is expected to generate negative risk-adjusted returns during the next 12 months.

NOT RATED: Canaccord Genuity does not provide research coverage of the relevant issuer.

"Risk-adjusted return" refers to the expected return in relation to the amount of risk associated with the designated investment or the relevant issuer.

Risk Qualifier

SPECULATIVE: Stocks bear significantly higher risk that typically cannot be valued by normal fundamental criteria. Investments in the stock may result in material loss.

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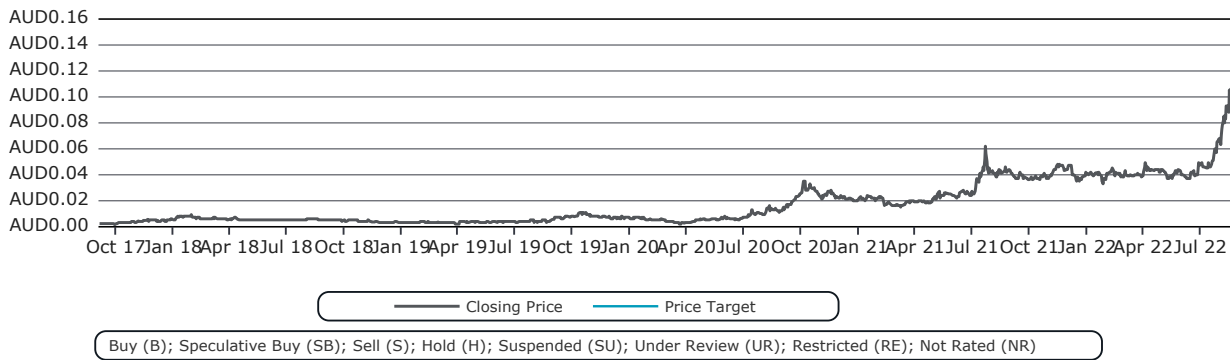
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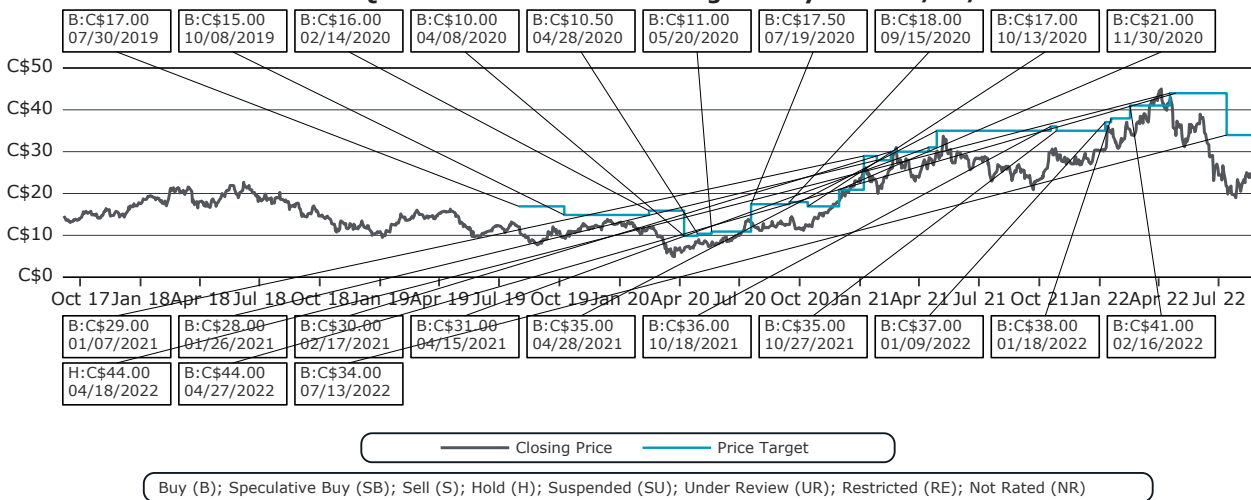
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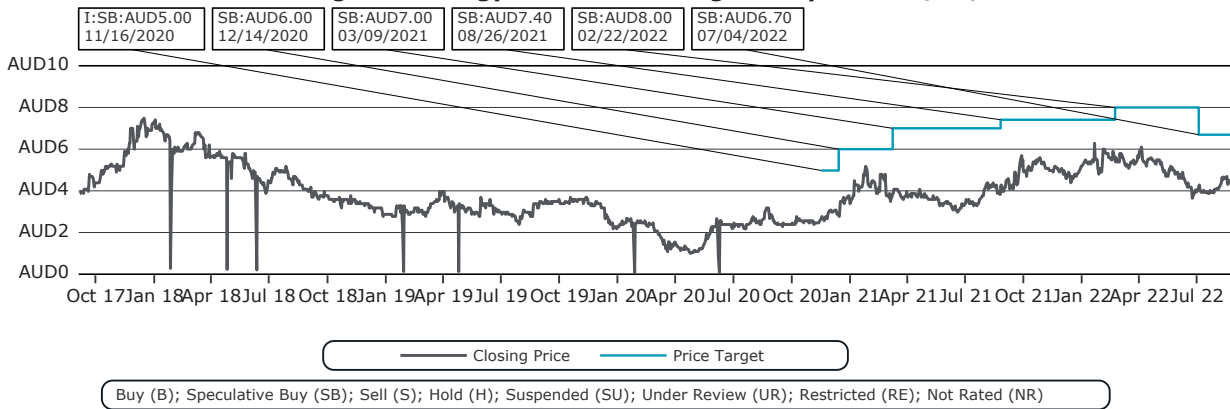
Dreadnought Resources Limited Rating History as of 09/01/2022



First Quantum Minerals Ltd. Rating History as of 09/01/2022



Hastings Technology Metals Ltd Rating History as of 09/01/2022



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