

### **Yangibana Project – Begin the Future**



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#### All currency amounts are in A\$ unless stated otherwise.

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#### **Exploration Targets**

The terms "Target" or "Exploration Target" where used in this presentation should not be misunderstood or misconstrued as an estimate of a Mineral Resource as defined in this context. Exploration Targets are conceptual in nature, there has been insufficient exploration to define a Mineral Resource and it is uncertain further exploration will result in the determination of a Mineral Resource.

#### **Competent Persons' Statement**

The information in this presentation that relates to Resources is based on information compiled by Lynn Widenbar. Mr Widenbar is a consultant to the Company and a member of the Australasian Institute of Mining and Metallurgy. The information in this presentation that relates to Exploration Results is based on information compiled by Andy Border, an employee of the Company and a member of the Australasian Institute of Mining and Metallurgy.

The information in this announcement that relates to Mineral Resources is based on information compiled by Lynn Widenbar. Mr. Widenbar is an independent consultant to the Company and a member of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Widenbar has sufficient experience relevant to the styles of mineralisation and types of deposits which are covered in this announcement and to the activity which they are undertaking 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' ("JORC Code"). Consents to include statements in this announcement have been provided in previous announcements entitled "Final 2017 JORC Resource Update Including Auer North Results" dated 22nd November 2017; "Yangibana Driject" dated 22th July 2017 and "Increase in Measured and Indicated Resources at Yangibana Project" dated 22nd November 2018

The information in this presentation that relates to the Fraser's and Bald Hill Ore Reserve is based on information reviewed or work undertaken by Mr Frank Blanchfield, FAusIMM, an employee of Snowden Mining Industry Consultants. 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 this announcement and DFS of the matters based on his information in the form and context in which it appears.

The scientific and technical information in this presentation that relates to process metallurgy is based on information reviewed by Ms. Narelle Marriott (Principal Engineer – Beneficiation and Mr. Zhaobing (Robin) Zhang (Process Engineering Manager) of Hastings Technology Metals Limited. Both Ms. Marriott and Mr Zhang are members of the AusIMM. Each has sufficient experience 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 by the JORC Code 2012. Ms. Marriott and Mr Zhang consent to the inclusion in this announcement of the matters based on their information and in the form and context in which it appears

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### Investment Attraction – Why Hastings?

- Highest NdPr content at 41% of TREO
- CAGR of 9% for NdPr due to expected strong demand from EV sales
- NPV A\$447m : IRR 28% : Payback 2.6 years
- Average Annual Free Cash Flow ~A\$137m
- EIA report completed, progressing on to final permitting and approvals
- German Offtake Contract drafting with Thyssenkrupp, negotiations with other T1s

- Boatou SkyRock contract signed for 2,500T a year for 5 years
- KFW Bank strong support for UFK concessionary project finance loan
- Production start 2Q 2021

### Site Overview Broome Onslow Yangibana Project Area Carnarvon \$ Meekatharra Yangibana Project Area Geraldton Fremantle Perth Legend • Town Homestead HIRE OF MUR - Route 1 - Route 2 - Route 3 - Route 4 5

## **Resources and Reserves**

Mineral Resources	Tonnes (Mt)	TREO %	Nd <sub>2</sub> O <sub>3</sub> +Pr <sub>6</sub> O <sub>11</sub> %
Measured	4,727,000	1.17	0.42
Indicated	8,652,000	1.24	0.41
Inferred	8,294,000	1.09	0.36
TOTAL	21,673,000	1.17	0.39
		Cobra- Dairy	
Ore Reserves	Tonnes (Mt)	TREO %	$Nd_2O_3 + Pr_6O_{11}\%$
Probable	10,345,000	1.22	0.43
Final Product	MREC (tpa)	TREO %	$Nd_2O_3+Pr_6O_{11}\%$
	~15,000	>58.00	20*
		Recovery	~ 76%

\* 34.2% is average ratio of Nd<sub>2</sub>O<sub>3</sub>+Pr<sub>6</sub>O<sub>11</sub> for LOM, the Nd<sub>2</sub>O<sub>3</sub>+Pr<sub>6</sub>O<sub>11</sub> ratio is 40% to 42% for the first five years production.

### Yangibana Advantage – Highest Nd-Pr ratio

Comparison of REO Distribution & Reskat Value

Comparison of REO Distribution & Basket Value Between Hastings and Major Light RE Producers						
			China		F	of China
RE Oxide/TREO	Unit	Hastings	Baotou	Sichuan	Mt Weld	Mountain Pass
Lanthanum	%	9.99	25.94	36.50	25.16	33.22
Cerium	%	39.59	50.69	47.90	46.36	49.10
Praseodymium	%	8.01	5.15	4.10	5.38	4.30
Neodymium	%	33.80	15.90	10.00	18.79	12.00
Samarium	%	3.88	1.21	0.70	2.27	0.80
Europium	%	0.84	0.22	0.08	0.47	0.12
Gadolinium	%	1.80	0.39	0.23	0.85	0.17
Terbium	%	0.15	0.05	0.04	0.06	0.04
Dysprosium	%	0.50	0.11	0.06	0.16	0.07
Yttrium	%	1.14	0.25	0.31	0.45	0.10
Other	%	0.29	0.10	0.08	0.05	0.09
Economic Value Factor		1.90	1.00	0.73	1.14	0.81
Basket Price U	SD/kg	25.00	13.25	9.65	15.05	10.75

 Nd-Pr /TREO composition is validated by customers in the MREC

- Economic Value Factor calculated on individual % of REE in the ore body x REO prices
- Yangibana: high Nd-Pr content of 41%

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 Last 12 mths avg basket price -USD25.00

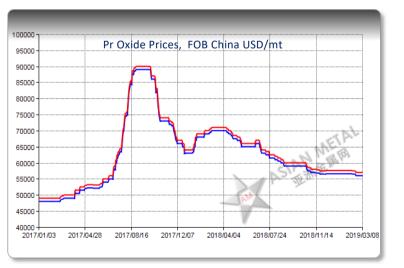
## Spot Prices of Rare Earth Oxides (6 Mar 2019)

China F.o.B. Export prices 06-03-2019 (USD/kg) & YTD change

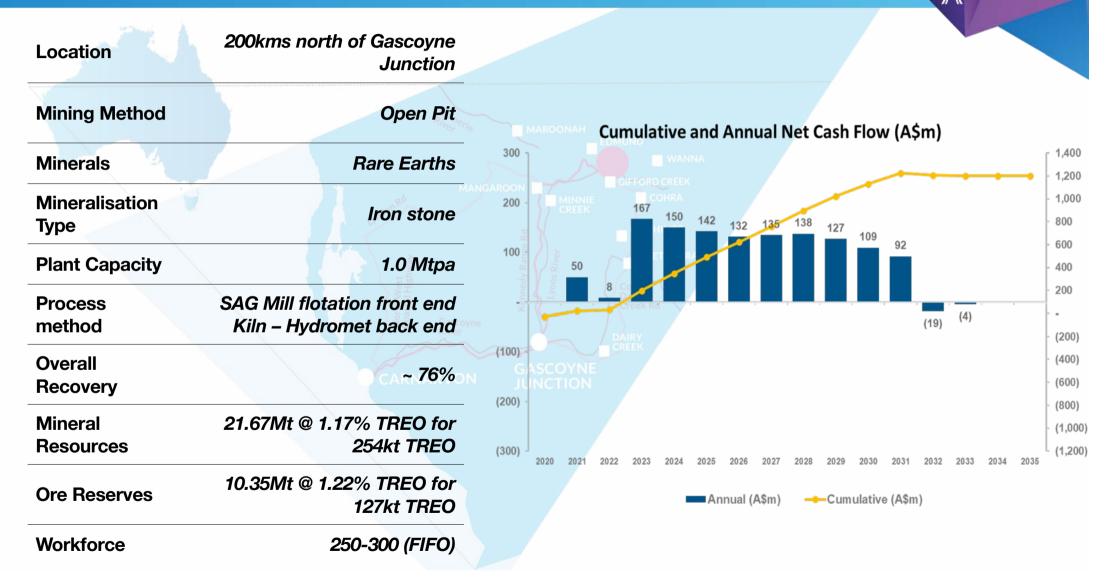
Lanthanum oxide	La2O3	\$ 2.0	0 %
Cerium oxide	CeO2	\$ 2.0	0 %
Praseodymium oxide	Pr6011	\$ 57.00	- 1 %
Neodymium oxide	Nd2O3	\$ 46.50	0 %
Dysprosium oxide	Dy2O3	\$ 183.00	+ 3 %
Terbium oxide	Tb407	\$ 438.00	+1%
Samarium oxide	Sm2O3	\$ 1.92	- 3 %
Europium oxide	Eu2O3	\$ 39.80	0 %
Erbium oxide	Er2O3	\$ 23.00	0 %
Holmium oxide	Ho2O3	\$ 44.00	-9%
Lutetium oxide	Lu2O3	\$ 619.00	0 %
Yttrium oxide	Y2O3	\$ 2.80	0 %

Source: ASIAN METAL 06 Mar 2018



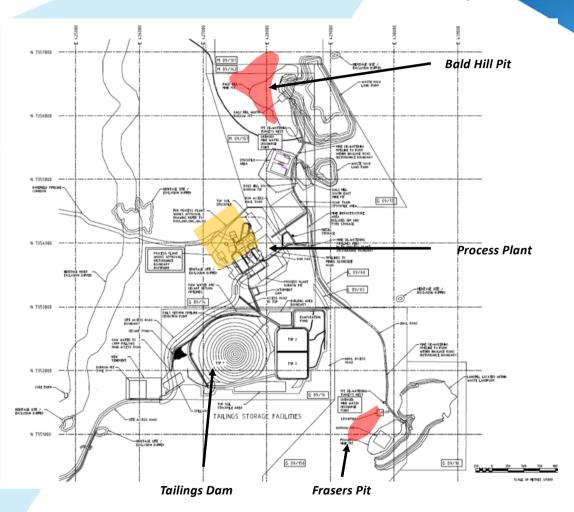


### Site Overview



# Mine Economics

Net Present Value	\$447 million 28%		
Internal Rate of Return			
Project Payback	2.6 years		
Capital cost	\$427 million		
Average annual free cash flow (pre tax)	\$ 137 million		
Mining Production	1.0 Mtpa		
Mine Life	11 years		
Annual (MREC) production	~15,000 tpa		
Annual (TREO) production	~8,500 tpa		
Average (Nd Pr) production*	*3,400 tpa		
LOM C1 cost	~ \$17.71 / kg TREO		
Commissioning Date *First 5 years production	Q1 2021		



Pre-Production Capex: A\$413m - Breakdown	
Revised Capex less: Sunk costs (to 31 Jan 2019)	427 (14)
Pre Production Capital Costs	413
Process Equipment Upgrades	42.0
Hydromet & Gas Scrubber area 23.0	
Piping	
Flotation Thillps 5.0	
First fill reagents VINETHARRA 3.0	
Crushing & Grinding 5.0	
Tailings Storage Facility	1.3
Camp size increased from 240 to 380 beds	3.0
Increase in Mining pre-stripping	2.7
Services (water/earthworks/plant control) UNCTION	13.0
Spares & First Fills	1.6
Indirects (labour/consultants)	42.0
Others	9.0
Costs savings:	4.4
Airstrip/powerstation/gas pipeline/others	(23.4)

## **Final Process Flowsheet**

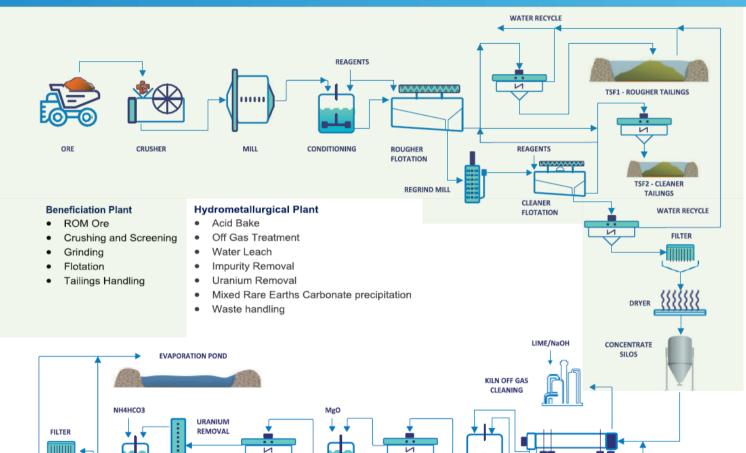
MREC

PRECIPITATION

DRYER

PRODUCT

И



IMPURITY REMOVAL

И

CCD CIRCUIT

RELEACH

H2O

ROTARY KILN

TSF3 - HYDRO TAILINGS

ACID TANK

WATER LEACH

LIMESTONE/LIME

EFFLUENT

TREATMENT

### **Beneficiation:**

 Standard monazite flotation

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 Proprietary fatty acid collector is in use

#### Hydromet:

 Well known and reliable hydrometallurgical processes.

# Mixed Rare Earth Carbonate (MREC):

- Annual production of 15K tonnes
- Customer takes title FOB WA port of loading
- Separation into TREO oxides by third party

### Beneficiation Pilot Plant Testwork



• 2 times beneficiation and continuous pilot plant testing has successfully validated the simple and effective flowsheet of Yangibana flotation process

- The second pilot plant operation achieved 80% TREO recovery improved from 70% of first pilot plant operation.
- Clear indication of progress from bench scale to commercial production.
- Successfully generated bulk samples for downstream engineering equipment design test work

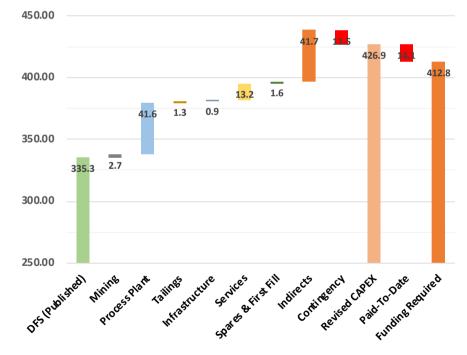
### Capex improvements since DFS

**Project Capital Costs** Improved economics/flow sheet

<ul><li>Power station</li><li>Gas pipeline and power station outsourced</li></ul>	
Crushing	
<ul> <li>No mobile crushing</li> </ul>	
<ul> <li>24hr Live stockpile and re-feed</li> </ul>	
Process Plant	
<ul> <li>Optimised footprint</li> </ul>	
Reduce traffic interactions	
<ul> <li>Improved materials handling</li> </ul>	
<ul> <li>Installation of concentrate silos</li> </ul>	
Ore sorting	
<ul> <li>targeting 40 - 50% rejection of mass upfront</li> </ul>	
TSF	

### TSI

Better & more manageable design



#### **Capex Changes from DFS**

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## **Update on Major Activities**

Phase One Enabling Infrastructure Apr 2019 – Q3 2019 Phase Two Mine Construction Q3 2019 – Q1 2021

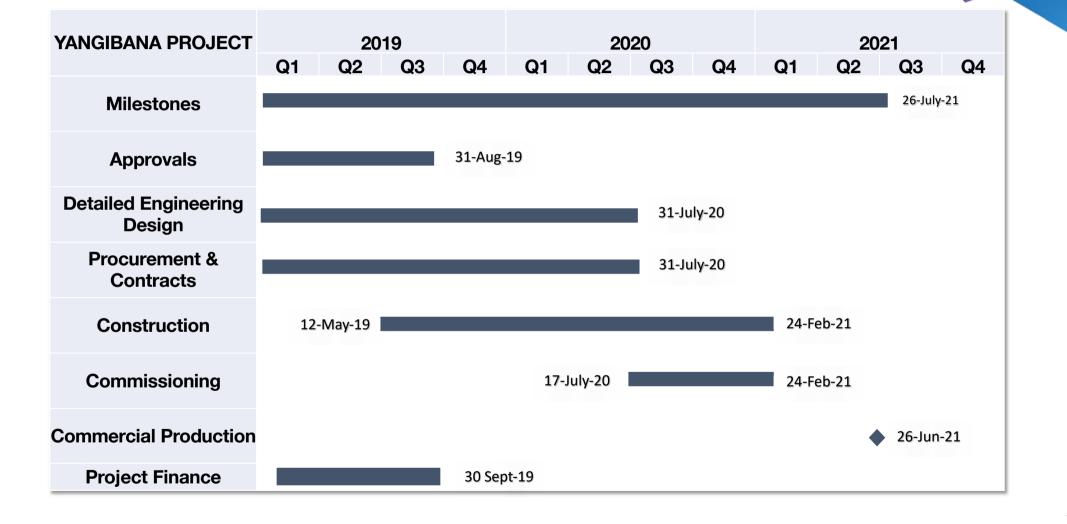
- Installation of the accommodation camp
- Airstrip upgrade
- Camp completion
- Continuing development of the site access roads
- Finalising design work
- Ordering of long lead time items
- Offsite fabrication of plant
- Approval of full EPA permits, (which will enable phase 2)

- Process plant
- Open pit pre-stripping
- Tailings Storage Facility
- Communications Network
- Gas pipeline + power station
- Admin offices

Cost certainty has increased with 54% of total pre-production capital in lump sum and civils earthworks contracts near finalisation with experienced supply partners:

- Outotec SAG, Flotation
- FLSmidth Kiln
- TAPC/Tialoc Scrubber

## **Project Timeline**



# **Global Demand Growth for Permanent Magnets**

CAGR 2017 – 2022: ~ 9%

2016 USDm	2017 USDm	2022 USDm	CAGR% 2017–2022
1,933.9	2,090.8	3,078.0	8.0
1,888.9	2,074.6	3,287.3	9.6
1,131.8	1,228.5	1,846.8	8.5
951.9	1,025.1	1,514.4	8.1
914.5	984.4	1,514.4	9.0
674.7	732.2	1,071.0	7.9
7,495.7	8,135.6	12,311.9	8.7
	USDm 1,933.9 1,888.9 1,131.8 951.9 914.5 674.7	USDmUSDm1,933.92,090.81,888.92,074.61,131.81,228.5951.91,025.1914.5984.4674.7732.2	USDmUSDmUSDm1,933.92,090.83,078.01,888.92,074.63,287.31,131.81,228.51,846.8951.91,025.11,514.4914.5984.41,514.4674.7732.21,071.0

### Global Market for Permanent Magnets - by Industry 2022 (USDm)

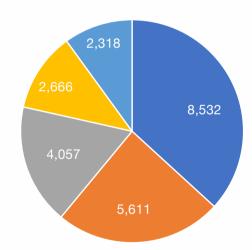
#### Automotive





Medical

Others

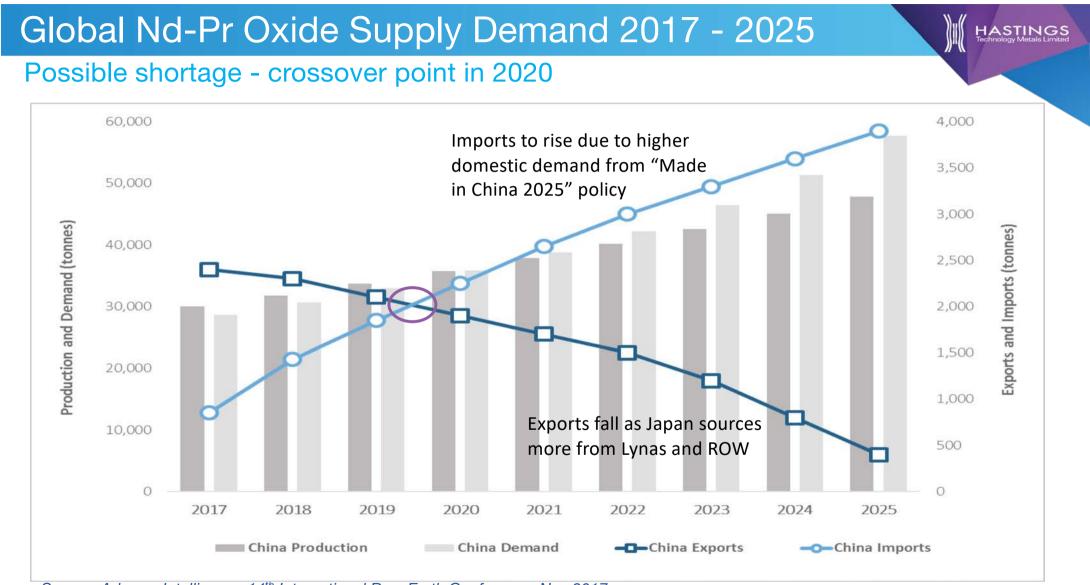


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#### NdFeB magnets offer the best power to cost ratio

Materials	Average Price (\$/lb.)	Average Max. Energy Product (MGOe)	\$/MGOe
Hard Ferrite	2.0	3.5	N/A
NdFeB	75.0	30.0	2.3
Samarium-Cobalt	162.0	22.0	7.4
AlNiCo	27.0	8.0	3.4

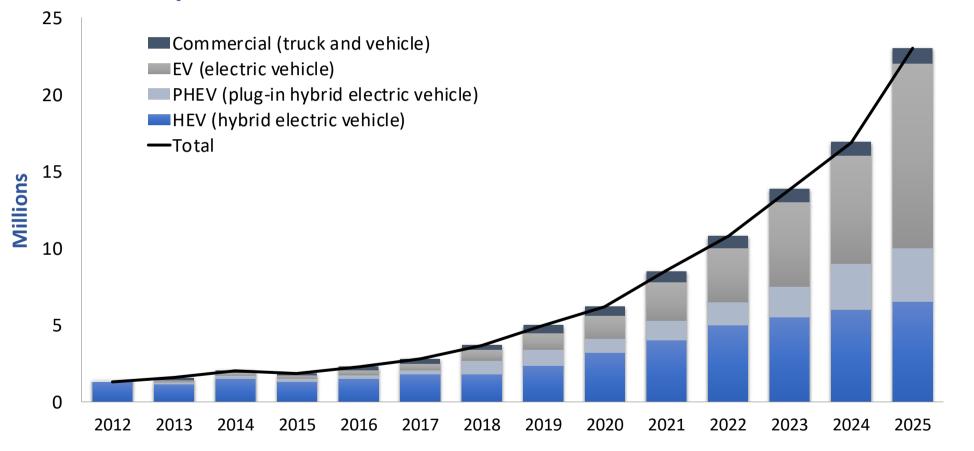
Source: BCC Research: Magnets and Magnet Materials: Global Markets Oct 2017.



Source: Adamas Intelligence 14<sup>th</sup> International Rare Earth Conference, Nov 2017

## EV - Catalyst for NdPr Demand

### **Expected Growth of Electric Vehicle Sales Worldwide**



Description	Unit	
LOM Basket Price (avg)	US\$ / kg	37
Life of mine	years	11
Project NPV (post-tax)	A\$M	447
IRR	%	28%
Payback period	years	2.6
LOM Net Revenue	A\$M	3,849
LOM Opex	A\$M	1,900
Project Capex	A\$M	427
Pre-production Capex	A\$M	413
Avg Annual Free Cash Flow (pre tax)	A\$M p.a.	137
LOM Free Cash Flow	A\$M	1,502
LOM EBITDA	A\$M	1,949
EBITDA margin	%	50%

- Pre Production Capex A\$413m
- NPV of A\$447m and IRR of 28% exceeds hurdle rate

- Payback period 2.6 years
- Avg Annual Free Cash Flow (pre-tax) A\$137m
- Significant potential mine life upside as total tenement area is 650sqkm

## Funding Plan: 65% Debt / 35% Equity

KfW Bank advising on UFK loan application (concessionary interest rates)

- Proposed Structure:
  - ✓ Senior Debt (7 years/10 years)
  - ✓ Equity
  - ✓ Offtake Advance Payment
- ~ \$250 300M

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- ~ \$100 -150M
- ~ \$50m
- KFW advancing on application to Euler Hermes for UFK scheme (German government loan guarantee) which offers concessionary interest rates (compliant with Equator Principles)
- Multiple discussions with German T1 Offtake customers for long term contract as part of UFK loan application
- SPV for infrastructure loan due diligence underway with Australian government funded agency
- Planned equity capital raising March and Sept prior to close of debt financing (expected 3Q 2019)
- Possibility of Advance Payment by Offtakers



Equity ~ A\$100 m Placement in 2 Tranches

**Senior Debt** 

Target close 30 2019

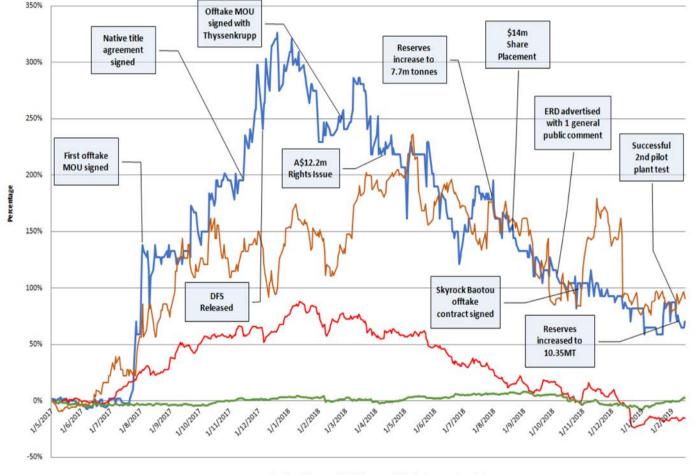
A\$250 - 300m



# Hastings Equity Statistics (HAS:ASX)

### Steady growth in market cap since May 2017

- Market Cap ~ **A\$130m**
- ~ 1250 Shareholders
- Top 10 shareholders (Malaysians) owns
   ~ 70%
- **A\$75m** raised since 2014
- Cash: A\$12m as reported on 31<sup>st</sup> Dec 2018
- No Debt
- Included in the ASX All Ordinaries Index



#### **Relative Percentage Performance**

## **Board of Directors**



### Neil Hackett Non Executive Director &

#### **Company Secretary**

- Corporate Finance and Regulatory Experience ASIC 1990-1999
- 10 years investment and funds management experience
- 15+ years ASX Director, Company Secretary and Senior Executive mining and industrial experience
- Independent Corporate Governance Advisor and AICD Facilitator



### **Charles Lew**

#### **Executive Chairman**

- Corporate Finance Director HG Asia Securities 1990 -1997
- MD of ABN Amro Investment Bank Singapore 1997 - 2000
- Independent Director of RHB Banking Group 2004 - 2016
- 30+ years experience in investment banking in London (HSBC & Robert Fleming) and in Singapore
- Private investor and entrepreneur in F&B, real estate, financial services, etc



### Mal Randall

### **Non Execuitve Director**

- Bachelor of Applied Chemistry & Fellow AICD.
- 45+ years extensive experience in corporate, management and marketing in the resources sector including 25+ years with the Rio Tinto group of companies.
- Experience as Chairman or NED level in a diverse range of commodities including Lithium, Base Metals, Potash, Iron Ore, Uranium and Mineral Sands



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### Jean Claude Steinmetz

# Non-Exec. Director & Commercial Director (PT)

- Previously Chief Operating Officer for Lynas Corporation
- 25+ years Involved in the chemical industry with Rhodia and General Electric
- Chairman of the Auto Plastic and Innovative Materials Committee of Sino-EU Chemical Manufacturers Association

# **Executive Management Team**

### In depth experience and specialised skills



Andy Border General Manager Exploration

- 40+ years experience as a geologist
- Rare earths, copper, gold 
   and industrial minerals
- Recent roles include Exploration Manager, COO and MD of a number of ASX-listed companies with projects in Australia and elsewhere



Valerie Quay Legal Counsel

- Barrister at Law, Middle Temple UK and Herbert Smith LLP London
- Focused experience in corporate commercial law
- Management & Strategy consulting at McKinsey & Co, London
- Deputy Director Strategy and Corporate Governance, National Philanthropic Centre, Singapore



Andrew Reid Chief Operating Officer

- 25 years of expertise in mine management, geology and mining engineering concentrating on open pit and narrow vein mining
- Developed and managed mining projects in West Africa and Finland
- Previously COO of Finders Resources, GM of Kevitsa Mine, First Quantum Minerals, etc



### Pit Wah Chung Chief Financial Officer

- 20 years experience in financial reporting and tax
- Regional Financial Controller of Lifestyle Investment Group
- CFO of Muddy Murphy Holdings and Breadtalk Group Ltd
- Chartered Accountant of Singapore & fellow member of The Association of Chartered Certified Accountants (ACCA)



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#### Robin Zhang Process Engineering Manager

- 20+ years experience in R&D, project engineering, plant commissioning & operations
- 8 years Lynas Senior
   Technical Services &
   Project Development
   Manager
- 11 years at Gansu Rare Earth Group China -Deputy Director Technical Centre 24

